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Volume 18

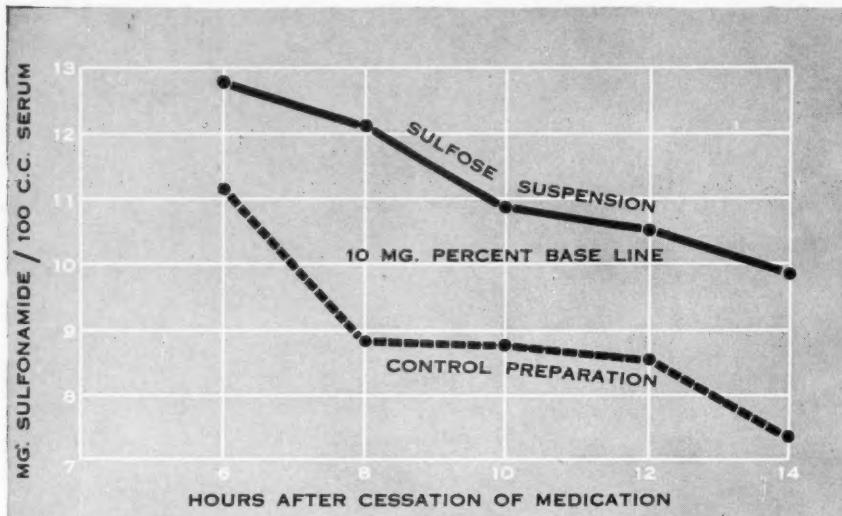
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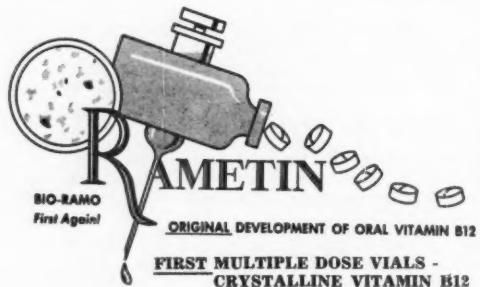
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1. Brauhau, H. C., Akre, O. H., and Everly, J. B.: *Gastroenterology*, 63:72, Sept., 1950.

2. Jordan, Sara M.: *Ann. West. Med. & Surg.*, 4:33, Mar., 1950.

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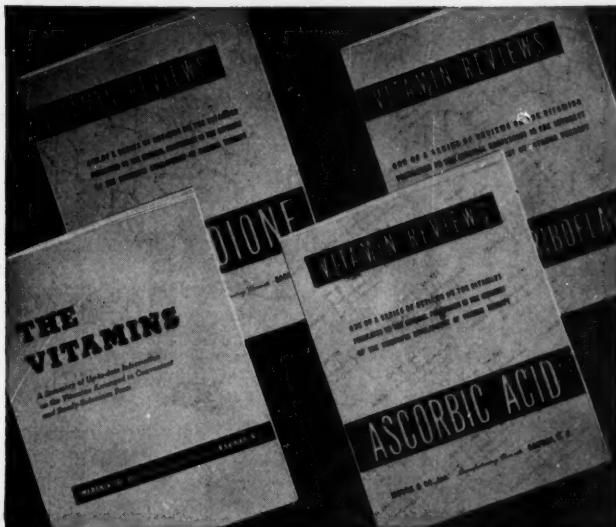
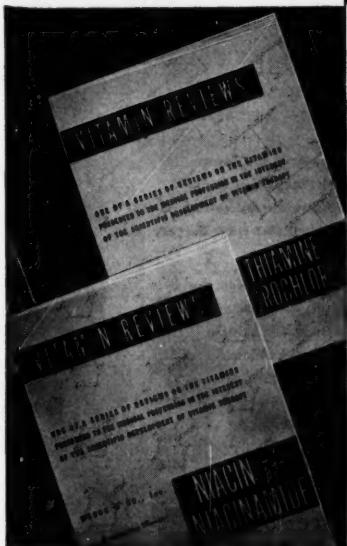


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FULMINATING TRICHINIASIS

EDWARD S. McCABE, M. D., AND JACOB ZATUCHNI, M. D., Philadelphia, Pa.

THE MYOCARDITIS due to *trichinella* larvae migration, as shown in these cases would appear to be the outstanding feature in the fulminating case. If encephalitis and hepatitis are present then the myocardial involvement may distort the symptomatology making it difficult to evaluate each pattern.

In 1860 Zenker (1) observed the larvae in the myocardium of a patient who had died of trichinosis. This phenomenon has not been demonstrated since. According to Terry (2) (1940) only eleven fatal cases have been reported in the literature including one of his own that had been mistaken for rheumatic myocarditis. From their animal experiments Dunlap and Weller (3) concluded that the presence of larvae in the myocardium and their active migration, not a blood borne toxic substance, produces the characteristic myocarditis.

The incidence of trichinosis as obtained from the Annual Report (4) of the Surgeon General of the Public Health Service of the United States was 17.1 per cent of two thousand autopsies. This was based on histologic examination of the human diaphragm only, and there would probably be some increase in incidence if muscle digestion technique and routine skin tests were utilized. The disease, however, is fatal in a relatively small percentage and recovery is usually complete. Murphy (5) reported a series of twenty-three cases with one death—roughly 4 per cent mortality—and that is confirmed by subsequent reports.

With the routine use of electrocardiograms Spink (6) found significant changes in six of his eighteen reported cases although only one case had clinical evidence of myocardial involvement.

CASE REPORT

The patient was a nineteen year old white girl who was admitted to Mercy Hospital*, Baltimore, 29 December 1946 with the chief complaint of generalized muscle and joint pains of two weeks duration. She had been incarcerated on a vagrancy charge three weeks prior to admission. A blood Kahn reaction was done and reported negative.

About two and a half weeks before admission to the hospital she noticed aching in her knees and elbows. This became progressively worse. She developed pyrexia, sore throat, and generalized muscle aches. She had been discharged one week previously from prison and feeling ill, she went to bed. The following morning she had difficulty moving her legs and weight bearing was agonizing. She could walk on her toes with assistance. The day prior to admission she had a bout of urinary and fecal incontinence but attributed the mishap to being unable to reach the bathroom without aid. Since she did not improve, she finally sought medical advice and was referred to Mercy Hospital for admission. Her dietary habits were poor but no history of ingestion of uncooked pork or sausage could be obtained. The pyrexia had become more marked. There was dyspnea and palpitation present but no ankle edema, chest pain, or distention of the neck veins. Menstrual history was negative and no attempt at abortion had been made. Systemic review was otherwise negative.

Past medical history and family history were non-contributory. As to social history, she ran away from home at the age

From the Department of Medicine — Temple University, School of Medicine.

Submitted Jan 19, 1951.

*Medical Service (H. R. Peters, M. D.)

of seventeen and worked as a chorus girl in Baltimore with long hours and improper living conditions.

Physical examination revealed a well developed, well-nourished white female nineteen years of age who appeared somewhat pale and weak. She exhibited definite flexion contracture deformity of the extremities. She was quite dyspneic and failed to cooperate, especially resenting any attempt to move her. Examination of the head was essentially negative. Pupils were round, regular, dilated but equal and reacted sluggishly to light and in accommodation. There was no ptosis or strabismus, and extra ocular movements were normal. No periorbital edema was seen. Fundoscopic examination was negative. Examination of the ear, nose and throat was negative. The neck was slightly rigid—mostly voluntary.

The lungs were clear to auscultation and percussion. The heart was slightly enlarged to percussion but no murmurs were heard. Blood pressure was 110/60 and the rate was 140 with regular rhythm. Examination of the abdomen and pelvis was essentially negative.

The lower extremities measured thirteen inches bilaterally. There was marked tenderness of both calves and lateral compression. No edema was seen. Neurological examination was negative. A provisional diagnosis of acute rheumatic myocarditis was made, and studies were to be made to rule out causes of dermatomyositis.

The initial laboratory work-up revealed; hemoglobin—11.4 grams or 76 per cent; erythrocytes—3.96 million; leukocytes—9,950; differential—30 per cent non-filamented polymorphonuclear cells, 50 per cent filamented forms, 8 per cent lymphocytes, 5 per cent monocytes, 6 per cent eosinophils, and 1 per cent basophils.

Urinalysis was negative and blood chemistry revealed: sugar 109 mgms.; blood urea nitrogen—9 mgms.; cholesterol—122 mgms, and esters 41 mgms. per cent. Icteric index was 7 and Kahn test was 4 plus. Total serum proteins were 6.2 grams per cent with 3.3 grams albumin and 2.9 grams globulin (A/G ratio 1:1). Prothrombin time using Brambel's method was 17 seconds undiluted and 132 seconds in the 12.5 per cent dilution. Cephalin-cholesterol flocculation was \pm at 48 hours. Cervical smear was negative for Neisserian infection.

The patient was started on penicillin and salicylate therapy. The next day a chest X-ray was negative and the cardiothoracic ratio was 13/26 centimeters. An electrocardiogram (Fig. 1) revealed a sino-auricular tachycardia of 160 with low voltage in Leads I and IV and inverted T waves in Leads II, III, and IV. There was a moderate degree of right ventricular preponderance. Another blood count with leukocyte differential showed 16,200 leukocytes total and 3 per cent eosinophils. No malarial parasites were seen. Cultures of blood and leukorrhea were negative.

She was given a digitalizing dose of cedilanid but no improvement was seen. The idea of muscle biopsy was entertained as was a skin test, but discarded when further questioning revealed no known exposure. A transverse friction rub was heard over the precordial area. The night of the 2nd of January she became mentally disoriented and was placed in an oxygen tent which she later tore. Her liver was found to be enlarged and tender and yet her lungs were clear.

A spinal tap was done and pressure was 110 mm. water. Routine studies as cell count, Pandy, and Kahn tests were negative. No parasites were seen in the spinal fluid. Another blood count showed no eosinophils and a slight drop in leukocyte and erythrocyte counts.

On 3 January the patient became more dyspneic. Blood pressure was 100/60 and pulse was 140 with regular rhythm. Lungs were still clear. Prothrombin time was reported as 81 seconds undiluted so that salicylate therapy was discontinued and Vitamin K given intravenously immediately. Routine agglutinations for typhoid, paratyphoid, brucellosis, tularemia and typhus were reported as negative. Stool examinations were negative for ova and parasites. Despite active supportive therapy the patient's condition gradually became worse and she died that afternoon 3 January 1947.

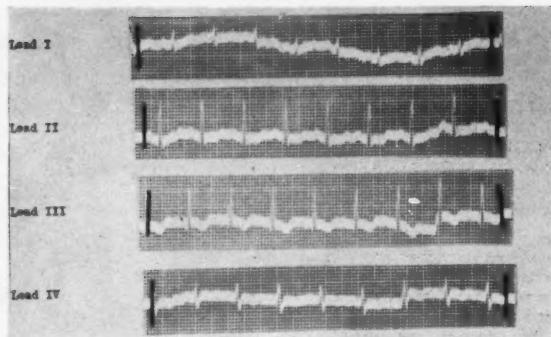


Fig. 1: EKG showing myocardial damage

RESUME OF ESSENTIAL AUTOPSY FINDINGS

Heart: The pericardial sac contains about 100 cc of straw colored fluid and the pericardial surfaces are smooth and glistening. The heart weighs 180 grams. The myocardium has a dull color and is soft and doughy in consistency. There are numerous petechial hemorrhages into the epicardium and myocardium, more prominent at the base of the heart than at the apex. The ventricles appear moderately dilated. All of the valves appear normal and competent. The aorta and coronary vessels are normal in all respects.

Liver: It weighs 1600 grams. The external surface appears normal. There are no nodules. On section the cut surface reveals a nutmeg appearance. The gall bladder is moderately distended and bile ducts are normal and patent.

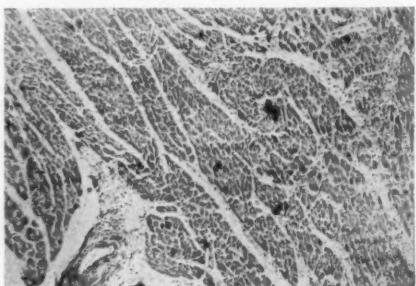


Fig. 2: Section showing extensive myocarditis

MICROSCOPIC NOTES

Heart: (Fig. II): There are foci of polymorphonuclear leukocytes in the epicardium. There is myocardial degeneration and polymorphonuclear infiltration is encountered diffusely throughout the myocardium. Sections through the auricular wall show no evidence of Aschoff bodies. The endocardial surface is swollen and there is coagulation of the layers in the ventricles. In the auricular wall there is a large pool of hemolysed red cells. There are patches of focal accumulation of polymorphonuclear leukocytes which suggest parasitic reactions throughout the myocardium where muscle fibers are disintegrating. Despite countless sections no parasites can be demonstrated in the heart.

Striated muscles (Figs. III, IV): The sections show an acute myositis. The fibers are widely separated and many of the fibers are bulging with coiled parasites that can be demonstrated in great numbers—average 5 parasites per low power field. About most of the parasites there is a polymorphonuclear

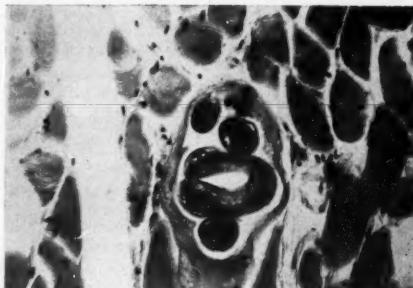


Fig. 3: Section of muscle showing a typical parasite (trichina) 400x. Note the absence of calcium deposit about the parasite.

and eosinophilic reaction. There is no fibrosis and no calcareous precipitate indicating this is an acute process.

Liver (Fig. V): There is marked fatty degeneration of the parenchyma. Most of the vacuolated cells are along the portal path. Around the efferent vessels the liver cells contain only occasional vacuoles. The cells present a coagulated cytoplasm, however, which is deeply bile stained. There is also an accumulation of polymorphonuclear leukocytes in the hepatic triads.



Fig. 4: Section of muscle showing the absence of a leucocytosis, dilatation of the fibers and no allergic response 100x.

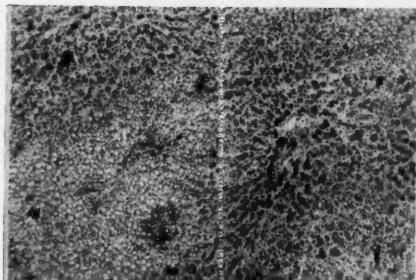


Fig. 5: Section of liver showing fatty degeneration along the portal zone of the lobule and normal cells about the central vein. The bile capillaries and portal zone are infiltrated with fat. 100x.

A second case with a more favorable outcome is presented now: L. W., a 40 year old white salesman, was perfectly well until November 12, 1949, at which time he noted a sore throat, malaise, muscle aches and pains, and fever. His physician prescribed "sulfa drugs," two tablets every four hours for three days. Within a few hours he began to feel better. However, it was not until November 13, 1949, that his temperature became normal. Even though he felt weak, he continued to work. On November 19, 1949, he noticed that his eyes were itchy, watery, and pink. Moreover, he began to experience aches and pains again, especially in the thigh muscles. His temperature became elevated. Again he called his physician who treated him symptomatically. When his symptoms persisted, he was referred to the Temple University Hospital for study and treatment.

There was marked edema of the palpebral and bulbar conjunctivae with drying and scaling of the eye-lids externally. The pharynx appeared congested. B.P.—120/75; P.R.—100 min.; T—102° F. A few rales were heard bilaterally. No murmurs were heard and the liver was not enlarged. Otherwise, the physical examination was negative.

The fever was remittent and intermittent with a proportionate tachycardia. Muscle aches and pains were present but mild in degree.

Because of the possibility of a sulfa sensitivity reaction; fluids, alkali, and antihistamines were given without any effect. In view of the eye changes and accompanying systemic reaction, trichinosis was considered.

Questioning revealed that the patient ate pork at least twice a week and preferred it rare. Furthermore, that he ate in a "dirty restaurant" near his place of employment.

On November 30, 1949, a biopsy of the right gastrocnemius muscle, at the junction of the middle and distal third of the leg, was obtained. Encysted trichina larvae were found in numerous locations. In the vicinity of these cysts, striated muscle fibers showed changes varying from degeneration to inflammation. The cellular reaction was pleomorphic, with polymorphonuclear, eosinophils, and mononuclear cells. Occasionally, a foreign body giant cell was seen. It was the opinion of the pathologist (Dr. A. B. Peale) that the distribution of the reaction was not like that of the usual polyarteritis.

The fever was unrelenting. Weakness became more profound and mental changes manifest. Auditory and visual hallucinations with paranoid grandiose and persecutory delusions were experienced. Even though he was oriented in all spheres, emotional blunting and dissociation was noted. The psychiatrist (Dr. A. Hammerman) thought that the patient had an acute schizophrenic reaction of the catatonic paranoid type. Toxic psychosis seemed a more likely diagnosis in the light of future events. The spinal fluid dynamics, cellularity and chemistry were normal. Blood serology was reported negative, and electrocardiogram 12/5/49 revealed sinus tachycardia, rate 124/min, with flattening of the T waves in all leads. Blood cultures were taken and reported sterile.

On December 4, 1949, signs of pneumonitis appeared over both lower lobes. A chest x-ray taken on December 1, 1949, and on December 5, 1949, were negative. Sputum cultures did not reveal any pathogenic bacteria. Consult Chart I, for serial blood counts.

CHART I

Date	11/23/49	11/26/49	12/2/49	12/9/49	12/13/49	12/19/49
	Hb	15.0	12.3	12.1	13.7	11.8
RBC	5.67	4.65	4.32		4.77	3.42
F	26	23	37	27	41	48
P	81	50	52	78	78	67
NF	55	27	15	51	37	19
L	14	13	29	8	15	21
M	1	2	3	2	0	3
E	4	35	15	11	7	9
B	0	0	1	0	0	0
WBC	12,450	14,900	13,000	11,300	15,100	8,400

Pencillin therapy was instituted in a dosage of 300,000 units of the aqueous preparation twice per day intramuscularly. There was no effect on the patient's course. On December 5, 1949, Hetrazan (15) therapy was begun. On the first day, a single dose of 150 mg. was administered orally; on the second day, it was given twice; thereafter, until December 12, 1949, it was given three times per day after meals. Clinical improvement began on December 6, 1949. However, his temperature remained elevated but showed diminishing fluctuations. From December 12-December 15, 1949, the dose of Hetrazan was increased to 200 mg. tid po with further defervescence. The drug was then stopped for four days with a resultant slight increase in body temperature. Administration of the drug on December 19, with continuance until discharge, resulted in further improvement. No untoward effects of drug administration were noted. A repeat electrocardiogram 12/22/49 still showed a sinus tachycardia, 104/min, but with T waves increased in amplitude.

DISCUSSION

The rarity of the fulminating picture, the absence of any marked eosinophilia and periorbital edema, with the negative history of ingestion of improperly cooked pork or sausage, and the presence of flexure contractures with local heat at joints all contributed to suggest the diagnosis of acute rheumatic myocarditis in the first case.

Electrocardiogram confirmed the myocardial involvement with the following findings: Low voltage in Leads I and IV, presence of right axis deviation, normal P-R interval, impaired ventricular conductivity manifested by slurring of QRS complex in all Leads and by T wave inversion in Leads II, III, and IV, sinus tachycardia. This is in agreement with the findings of Spink (6), although Beecher (7) consistently found a prolonged P-R interval.

The lungs were clear on initial x-ray examination and nothing to suggest Loeffler's syndrome (a possibility in the second case), was seen in the terminal plate. Larvae of the trichinella were not demonstrated in feces or spinal fluid and the blood was not examined. Sedimentation rate was not elevated but that may be explained

on the basis of congestive failure. It is regretted that a Bachman (8) intradermal test was not done at once. The immediate reaction is seen in the first few weeks switching to a delaying reaction that requires 24 hours or more to appear instead of 20 minutes as in the former. The precipitin test requires a month to become positive. The complement fixation test seen in two weeks is probably the more reliable.

McNaught (9) stressed the appearance of splinter hemorrhages along the distal ends of the finger and toe nail beds to form a crescentic band in 60 per cent of acute cases. This is evidently the result of the hepatitis and consequently the reduction of prothrombin content. In the first case there was the added hypoprothrombinemic effect of the salicylates. Her prothrombin time rose from 17 seconds undiluted to 81 seconds undiluted which is the critical range—i.e. less than 10 per cent of normal, even so, no splinter hemorrhages in the nail beds were seen and only a few scattered in the viscera, as beneath the epicardium of the heart and in the pelvis of the right kidney, were found post mortem.

Permission to examine the brain could not be obtained but there is evidence in the literature (10,11) to substantiate the diagnosis of encephalitis, especially where mental confusion, disorientation, incoordination and behavior disorders are observed clinically.

Since larval migration is the main cause of symptoms, the antigenic structure of trichinella larvae is of interest. Melcher (12) has isolated two fractions: 1) an acid soluble protein, thermostable with three electro-phoretic components. It is responsible for the intradermal, precipitin and complement fixation reactions. 2) a polysaccharide which is responsible for precipitin activity only. The Forssman antigen is also present and may have been responsible for a false positive Kahn reaction which was 4 plus.

In attempting to verify Maus' (13) report that with the appearance of cutaneous sensitivity to trichinella antigen, there was an increased titer to hemolysin for sheep erythrocytes and that rabbits immunized by sheep cells or guinea pig kidney showed some evidence of protection to trichinella larvae, Rose (14) was unable to do so conclusively in humans. Nevertheless, the fact remains that the heterophil antigen may cause a biological false positive serological test for syphilis.

Dorin (15) prepared an anti-serum with high titer and specificity by absorbing the trichinella antigen on aluminum cream and injecting it into rabbits. Also, there is some evidence that radioactive phosphorus is picked up selectively by trichinella larvae. The former should certainly be tried in the fulminating case as supporting measures are evidently not enough.

Hetrazan (16) i.e. 1) Diethyl Carbamyl 4 methyl piperazine hydrochloride has been found highly effective in the treatment of experimental filariasis and trichinosis. Since the dosage in man for the treatment of the former condition is non toxic and has been found to be roughly one tenth that for the experimental infection, there was reason to believe this would hold for trichinosis in man. In the second case, the drug seemed to be responsible for much of the general improvement in the patient's condition as witnessed by the relapse when the drug was stopped.

SUMMARY

1. Fulminating cases of acute trichinosis are presented in which the outstanding features are myocarditis, encephalitis, and hepatitis.

2. The classical history of ingestion or improperly cooked meat, followed by gastrointestinal upset and signs of periorbital edema, acute myositis, and eosinophilia were either missing or obscured in one case.

3. Prophylaxis is still the treatment of choice but the efficacy of hyper immune serum and/or radioactive phosphorus remain to be evaluated. Hetrazan 200 mgms tid was successfully employed in the treatment of the second case.

4. The histologic sections, especially of the heart and liver, are particularly instructive due to lack of fatal case reports in man.

5. The heterophil antigen present in the larvae may give rise to a false Kahn reaction.

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SALMONELLOSIS AND SHIGELLOSIS IN COOK COUNTY, ILLINOIS;

1. CLASSIFICATION OF SIX HUNDRED SALMONELLA AND SHIGELLA STRAINS ISOLATED FROM PATIENTS OF COOK COUNTY HOSPITAL

OSCAR FELSENFELD, M. D., VIOLA MAE YOUNG, M. S. AND TAMA YOSHIMURA, B. S., Chicago, Illinois

SALMONELLOSIS, especially salmonellosis caused by typhoid and paratyphoid bacilli, has been known for a very long time. Recent advances in bacteriology, especially the introduction of modern laboratory techniques, facilitate the detection of *Salmonellae* and *Shigellae* to such an extent that the late '30-s and early '40-s saw a real boom in the diagnosis of salmonellosis and shigellosis. The serologic classification of these organisms progressed so far and branched into so many details that it nearly became a science by itself. *Salmonella* and *Shigella* typing centers were created, which diagnosed the types (or species) of these microbes. The largest of them in the United States is that of the U. S. Public Health Service, operated at the Communicable Disease Center in Chamblee, Georgia.

Hand-in-hand with the increasing differentiation of the strain went the recognition of their ecology. While all types of *Salmonella* are potentially pathogenic for man and animals, some strains have an epidemiology of their own, as, e.g., the typhoid bacillus. Others, as *S. pullorum*, are more frequent in fowl and infect man only occasionally.

The clinical picture of shigellosis has been well established, while that of salmonellosis is still less known to the general practitioner who is seeing today, thanks to great improvements in sanitation, few cases of typhoid fever but whose textbooks tell him little about salmonellosis caused by *S. typhimurium*, *S. montevideo*, *S. oranienburg* and other frequently encountered organisms.

Shigellae are transferred from man to man, eventually with the aid of food, while *Salmonellae* are propagated by man, animals and birds. The latter two groups serve as great reservoirs of food-borne human salmonellosis. The eating habits of the American people underwent some changes during World War II, when animal meat was scarce and the consumption of poultry steadily rose. With the increasing use of fowl meat, poultry-borne salmonellosis became a question to be studied.

Finally, the therapy of salmonellosis and shigellosis is still a matter of debate, especially since many claims have been raised concerning the efficacy of antibiotics in these diseases.

In view of these numerous interesting problems encountered in salmonellosis and shigellosis, it was decided to report the concepts of this Typing Center and this Enteric Service in a series of articles, the first of them being presented herewith.

Detailed studies on the distribution of *Salmonella* and *Shigella* types in large general hospitals of the

From the Hektoen Institute for Medical Research of the Cook County Hospital, Chicago 12, Illinois.

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middle west have not been carried out. It seemed, therefore, of interest to present to the medical profession such a survey covering detailed type and species identification of *Salmonellae* and *Shigellae*. The writers of the present paper previously submitted studies on the occurrence of these organisms in Illinois mental hospitals (1,2,3) and on material received from different laboratories in North and South America (4). These surveys, however, did not differentiate between hospitalized cases, contacts and carriers. Thus it was necessary to work up recently collected material from patients admitted to Cook County Hospital with this new purpose in mind.

It seemed also advisable to describe the laboratory procedures involved in the isolation of *Salmonellae* and *Shigellae*, since these are of paramount interest to the physician. His diagnostic work often depends so much on a well-functioning laboratory that a short recapitulation of a simple but effective method could prove of help.

MATERIALS AND MEDIA

Strains reaching the *Salmonella*-*Shigella* Typing Center of this institute from patients in Cook County Hospital were tabulated between April 1, 1948 and November 25, 1950, when their total number reached 600. During the same period of time *Salmonella* strains were received from two small hospitals and two private laboratories in Chicago. No comparison is being made in this paper with *Salmonella* and *Shigella* types which reached the center from other counties or states.

In order to detect *Salmonellae*, *Shigellae* and parasites in the stools of the patients, the following laboratory procedures were carried out:

Stools were received by the diagnostic laboratory within 30 minutes after evacuation. If the specimens were not expected to reach the laboratories within this period of time, preservatives were used. The employment of a preservative fluid was considered imperative for all rectal swabs and protosigmoidoscopic specimens, since drying could cause false negative results. Mueller's tetrathionate broth was used originally for the preservation of the bacterial flora. Later, however, Selenite-F medium tinted with enough 1:1,000 aqueous methylene blue to "mark" the fluid, served for this purpose. In order to present the entire procedure, it should be mentioned that part of the stools which was destined for parasitologic examination, was collected fresh or preserved in 10 per cent formalin, or D'Antoni's iodine, or, lately, also in polyvinyl-alcohol fixative (5). Equipment was available for proctologists who wished to collect material with a sterile swab, streak it to two slides, dump the slides into a coplin jar containing either Schaudinn's fluid or polyvinyl-alcohol fixative and then send them to the parasitologic laboratory. Details of the parasitologic examination which consisted of the study of direct saline suspensions, iodine tinged smears, flotation and slides stained with Mallory's hematoxylin, are being published in a different article (6).

Fresh specimens for bacteriologic studies were streaked to one eosin methylene blue (Difco, Inc.) and two S. S. agar plates (Difco, Inc.). Material was also inoculated into tetrathionate broth (Difco, Inc.); lately into Selenite-F fluid (B. B. L.). The next day suspicious colonies were picked from the plates to triple sugar iron agar (B. B. L.); and two S. S. plates were inoculated from the Selenite-F tube. Colonies were fished from these plates one day later.

SALMONELLOSIS AND SHIGELLOSIS IN COOK COUNTY

Organisms causing alkaline slant and changed (acid or acid and gas) butt in triple sugar iron medium were transferred to one tube of each:

Tryptone broth
Semisolid mannitol

Semisolid sucrose

The next day, motility and fermentation of the carbohydrates was read. An indole test was also performed.

Organisms showing alkaline slant and acid or acid and gas in the butt of triple sugar iron agar, negative indole reaction and no fermentation of sucrose but which broke mannitol were examined with polyvalent *Salmonella* sera, using the spot test method. If agglutination occurred, a preliminary report was sent to the hospital ward. The culture was transferred to agar slants and tryptone broth, then typed with specific sera (7).

Cultures which did not react with polyvalent *Salmonella* sera were inoculated into lactose, salicin and Voges-Proskauer medium, to observe delayed fermentation and the formation of acetyl methyl carbinal. *Salmonellae* do not break lactose or salicin and give a negative Voges-Proskauer test (8).

Cultures showing alkaline slant and acid butt but no gas were tested with polyvalent *Salmonella* sera (possible typhoid, *S. gallinarum* or other non-gas-forming *Salmonellae*), then, if not motile, with *Shigella* sera, using the spot test method:

Mannitol negative, indole negative: *Sh. Shigae* and *Sh. sachis* sera.

Mannitol negative, indole positive: *Sh. schmitzi* and *Sh. sachis* sera.

If the serologic reactions were negative, a urease test was performed, to exclude non-motile *Protei*.

Mannitol fermenting organisms were tested with these sera:

Indole negative: polyvalent *Sh. parady-enteriae* (Flexner and Boyd) and polyvalent *Sh. sonnei*.

Indole positive: polyvalent *Sh. parady-enteriae* (Flexner) and polyvalent *Sh. alkalescens*.

Tubes of rhamnose and dulcitol broth were also inoculated, since the diagnosis of *Shigellae* is always based on both serologic and biochemical properties of the cultures.

Further serologic examination was carried out with absorbent specific sera, using the growth from nutrient agar slants inoculated with the organisms.

While this method is rather slow, it proved efficient in dealing with the large numbers of cultures encountered at Cook County Hospital.

RESULTS

Table I lists the frequency of *Salmonella* strains isolated in patients from Cook County Hospital, according to the source of their first isolation. The table was compiled to conform with the Kauffmann-White schema of *Salmonellae*.

TABLE I
SALMONELLA TYPES ISOLATED FROM PATIENTS AT COOK COUNTY HOSPITAL

Age group	Children				Adults				Sum
	Stool	Blood	Other	Together	Stool	Blood	Other	Together	
<i>S. paratyphi</i> B	2			2	3	1		4	6
<i>S. typhimurium</i>	48	4	528.0 w	57	28	1	4e.l.s.u	33	90
<i>S. chester</i>	1			1					1
<i>S. derby</i>	2			2	1			2	3
<i>S. California</i>	1			1					1
<i>S. bredeney</i>					1	1		1	2
<i>S. choleraesuis</i>	2		2	2				2	4
<i>S. thompson</i>	2		2	2			1u	3	5
<i>S. virchow</i>					1			1	1
<i>S. oranienburg</i>	18	1		19	5		1u	6	25
<i>S. bareilly</i>					2			2	2
<i>S. montevideo</i>	16		10	17	14		1e	15	32
<i>S. tennessee</i>	1			1					1
<i>S. newport</i>	9			9	6			6	15
<i>S. muenchen</i>	1			1	1	1	1s	3	4
<i>S. manhattan</i>	1			1	1			1	2
<i>S. typhosa</i>	20	12	11	33	18	2		20	53
<i>S. enteritidis</i>	3	1		4	5			5	9
<i>S. berta</i>	1			1					1
<i>S. eastbourne</i>					1			1	1
<i>S. sendai</i>							1w	1	1
<i>S. panama</i>	2			2					2
<i>S. pullorum</i>					1			1	1
<i>S. give</i>	1			1	1			1	2
<i>S. anatum</i>	5			5	4			4	9
<i>S. lexington</i>	1			1					1
<i>S. newington</i>	1			2					2
<i>S. senftenberg</i>					1		1l	2	2
<i>S. soli</i>	1			1					1
<i>S. Wichita</i>	1			1					1
<i>S. cubana</i>	1			1	1			1	2
<i>S. cerro</i>								1	1
<i>S. minnesota</i>					1			1	1
<i>S. urbana</i>					1			1	1
<i>S. champaign</i>					1			1	1
	142	18	7	167	103	6	10	119	286

Notes:

e = from otitis media
j = from arthritis
l = from pneumonia
o = from osteomyelitis

s = from cerebrospinal fluid
u = from urine
w = from wound

TABLE II
SHIGELLA TYPES ISOLATED FROM PATIENTS IN COOK COUNTY HOSPITAL

Age group	Children			Adults			Sum	%
	Stool	Other	Together	Stool	Other	Together		
Sh. sachsi	3		3	2		2	5	3.15
Sh. ambigua	1		1	3	1a	4	5	
Sh. flexneri	I	3	3	1		1	4	
	II	18	18	20	1b	21	39	
	III	3	3	3		3	6	
	IV	23	23	35		35	58	36.66
	V	1	1				1	
	VI	2	2	3		3	5	
Sh. boydii				2		2	2	
Sh. alkalescens	14	1u	15	27	1u	28	43	13.69
Sh. sonnei	105		105	33		33	138	43.95
Sh. dispar	4		4	3	1w	4	8	2.55
	177	1	178	132	4	136	314	100.00

Notes:

a = from perinephritic abscess

b = from bile

u = from blood and urine

w = from wound

Thirty-five types of *Salmonella* were encountered. *S. typhimurium* infections were the most numerous, followed by *S. typhosa*, *S. montevideo*, *S. oranienburg*, *S. newport*, *S. enteritidis* and *S. anatum*, while *S. paratyphi B*, *S. derby* and *S. choleraesuis* and other types were less frequent.

Of the *Salmonellae* rarely diagnosed in man, the isolation of *S. pullorum* was of special interest. The case history of this patient has been published (9) as well as the finding of another poultry-borne *Salmonella*, *S. cubana* (10).

Unusual *Salmonella* types were seldom encountered. They included *S. eastbourne*, *S. soli* and *S. cerro*.

Infection with two *Salmonella* types in the same patient were the following: one child each with *typhimurium* and *S. enteritidis*, *S. typhimurium* and *S. oranienburg*, *S. muenchen* and *S. senftenberg*; two children each with *S. typhimurium* and *S. newport* in the stools; one child with *S. typhosa* and *S. eastbourne* in the blood stream; and, one child with *S. typhosa* and *S. montevideo* in arthritis of the knee joint (11). Among adult patients, double infections found on stool examinations included one combination of *S. typhimurium* and *S. typhosa* and one of *S. montevideo* and *S. oranienburg*. From the ears of one patient both *S. typhimurium* and *S. montevideo* were isolated. Finally, one adult harbored in his intestines at the same time *S. typhimurium*, *S. newport* and *S. thompson*.

Table II shows Shigella infections which came to the attention of the laboratory. They were slightly more numerous than the cases of salmonellosis. *Sh. sonnei* was the most frequently seen type, followed by *Sh.*

paradyENTERiae *Flexner IV*, *Sh. alkalescens* and *Sh. paradyENTERiae* *Flexner II*. With the exception of two strains, all *Flexner II* cultures were indole negative.

Of the unusual strains, *Sh. dysENTERiae* *Sachs Q 771* was isolated twice from children and once from an adult, while type *Q 1030* was found once each in an adult and a child. The two *Boyd* strains were *D 19* and *P 274*, respectively.

In children, two infections with two *Shigella* strains were observed. In one *Sh. paradyENTERiae* *Flexner II*, in the other *Sh. paradyENTERiae* *Flexner IV* were found together with *Sh. sonnei*. One adult and one child harbored *Sh. paradyENTERiae* *Flexner IV* and *S. typhimurium* in the stools.

Less frequent localizations of *Salmonella* infections were two lung infections (one chronic pneumonia caused by *S. senftenberg* and one lung abscess with *S. typhimurium*), one osteomyelitis (*S. typhimurium*), one arthritis (*S. typhosa* and *S. montevideo*), one otitis media (*S. typhimurium* and *S. montevideo*) and two phlegmonous skin affections (*S. typhimurium* and *S. sendai*, respectively). *S. typhimurium*, *S. thompson* and *S. oranienburg*, respectively, were isolated also from three cases of pyelonephritis in adults.

Clinical symptoms seen in cases suffering from salmonellosis will be described in a subsequent paper.

Shigellae were isolated from the blood and urine in two instances (*Sh. alkalescens* in both), once from a perinephritic abscess (*Sh. ambigua*), once from a cholecystitis (*Sh. paradyENTERiae* *Flexner II*) and once from a suppurating wound of the hand (*Sh. dispar*).

TABLE III
MOST FREQUENT SALMONELLA TYPES FROM COOK COUNTY HOSPITAL
AND OTHER SOURCES IN CHICAGO

Type	From CCH	%	From outside	Together	%
<i>S. typhimurium</i>	96	31.47	23	113	32.10
<i>S. paratyphi B</i>	6	2.97	2	8	2.27
<i>S. oranienburg</i>	25	8.74	5	30	8.52
<i>S. montevideo</i>	32	11.19	6	38	10.79
<i>S. newport</i>	15	5.24	15	30	8.52
<i>S. typhosa</i>	53	18.53	6	59	16.76
<i>S. enteritidis</i>	9	3.15	1	10	2.84
<i>S. anatum</i>	9	3.15	2	11	3.10
Others	47	15.56	6	53	15.10
	286	100.00	66	352	100.00

CCH = Cook County Hospital.

Table III shows a comparison of frequently encountered *Salmonella* strains isolated from patients in Cook County Hospital and cultures received from other sources in Chicago. The small number of organisms submitted from other Chicago institutions does not permit their evaluation at this time. Added to the statistics of Cook County Hospital, they do not cause a significant change in the percentual distribution of the *Salmonella* types, with the exception of that of *S. newport*. Thus the frequency of the most common *Salmonella* strains is, in decreasing order: *S. typhimurium*, *S. typhosa*, *S. montevideo*, *S. oranienburg* or *S. newport*, *S. anatum*, *S. enteritidis* and *S. paratyphi B*. No other strain occurred in more than 2 per cent of the cases.

DISCUSSION

Salmonellosis in those parts of the world where adequately treated water supplies are available is a disease transferred primarily from man to man and from animals to man. *S. typhosa* is an organism which is seldom propagated by patients suffering from typhoid fever, but is spread in urban areas of the United States by carriers, especially by food handlers and only seldom by water (4,12). Fifty-three typhoid cases observed during the 32 months of this study in only one large hospital constituted, however, a rather surprising number, when compared with formerly published data which were considerably lower. E. g., of 3,419 patients admitted to Illinois state hospitals in 1943, only 5 carried *S. typhosa* (3). Organisms from 6 cases of typhoid fever were typed by this center while receiving material in 1942 to 1944 from Illinois state hospitals and 2 in 1945 to 1947 while identifying organisms from a 320 bed hospital in Cook County, surveying 520 food handlers and 270 students.

Comparative tabulations published by Kessel et al. (13), Edwards et al. (14), the writers (15) and others show that the distribution of salmonellosis in man in the United States follows to a certain extent (and with the exception of *S. typhosa*, *S. choleraesuis* and *S. pullorum*) the distribution of *Salmonellae* in fowl. Edwards et al. (14), Hinshaw et al. (16), Darby and Stafseth (17) and Bidwell and Kelly (18) proved that most cases of salmonellosis in poultry in the United States are caused by *S. typhimurium*, *S. pullorum*, *S. bareilly*, *S. oranienburg*, *S. montevideo*, and *S. anatum*. *S. thompson* is not infrequent in dehydrated eggs (14). *S. typhimurium* and *S. newport* are, however, frequently present not only in birds but also in animals and human carriers. Numerous authors (references listed in 14 and 15) described cases and outbreaks of human salmonellosis which were proven to be caused by the consumption of infected poultry meat and eggs. Data presented in this paper, especially in Table I, show a decline of animal-borne salmonellosis as compared with poultry-borne infections. The authors of this paper never found *Salmonella* in pasteurized milk (15). *S. choleraesuis*, which is a purely meat-borne organism, and which caused 8 of the 190 outbreaks observed by the writers between 1943 and 1948 in the Middle West (4), was seen now only 4 times among 352 strains from the same area. While this may still be the result of random sampling, one would like to believe that post-war return to legitimate, federally inspected meat supplies played a part in the reduction of salmonellosis

originating from the consumption of pork. Unfortunately, much of the poultry eaten by the public reaches the American table without the benefit of proper post-mortem inspection by a competent veterinarian or other trained inspector. (4,15). Thus the infection rate with *Salmonellae* from fowl did not decrease as yet.

There is no explanation for the lesser frequency of *S. paratyphi B* infections. This organism has been found in animals, birds and human carriers, thus it is difficult to explain why it is less often encountered. *S. paratyphi A* has been seen once by the authors from the northern part of the United States. This is in agreement with the findings of other *Salmonella* centers (Seligman et al., 19). One keeps wondering why paratyphoid A is still being sought by many laboratories and textbooks in this area, while other *Salmonellae* which are so frequently seen, as *S. oranienburg*, *S. montevideo* and *S. newport*, do not even merit an honorable mentioning.

Among the *Shigella* strains, *Sh. dysenteriae* Shiga was not encountered during this survey, as it was absent in other studies conducted during previous years (3,20). Sachs and Boyd strains were seen, even if seldom. *Sh. sonnei* remained the leading cause of bacillary dysentery. Of the Flexner types, II (formerly W) and IV (formerly Boyd 103) led the list. These types have been predominating during the past years. *Sh. alcalescens* did not lose its importance, either. If unusual strains are disregarded and the relatively lesser frequency of the laboratory diagnosis of shigellosis conceded as a fact due to the use of antibiotics and sulfonamides prior to stool collection for bacteriologic examination, little change can be seen in the distribution of *Shigella* strains at present.

Grouping of patients according to age did not prove to be of much significance. Nevertheless, the tables list the patients according to age groups, to show the frequency of salmonellosis and shigellosis in children.

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SUMMARY

Two hundred eighty-six *Salmonella* and 314 *Shigella* strains from patients in the Cook County Hospital in Chicago were identified. The most frequently encountered *Salmonellae* were (in decreasing order) *S. typhimurium*, *S. typhosa*, *S. montevideo*, *S. oranienburg*, *S. newport*, *S. anatum*, *S. enteritidis* and *S. paratyphi B*, while often encountered *Shigellae* were classified as *Sh. sonnei*, *Sh. paradyssenteriae* Flexner IV, *Sh. alcalescens* and *Sh. paradyssenteriae* Flexner II. The occurrence of rare types is reported. There seemed to be a shift in the frequency of *Salmonella* strains, as compared with previous studies in the same geographic area but the distribution of *Shigellae* did not change. The importance of carriers and poultry in human salmonellosis were discussed.

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THE EFFECT OF DETERGENT COMPLEX ON THE RATE OF SECRETION OF GASTRIC JUICE AND ITS COMPONENTS IN TOTAL POUCHES OF THE STOMACH

OTTO E. LOBSTEIN AND SAMUEL J. FOGELSON, Chicago, Ill.

A COMPLETE change of the pattern of gastric juice secretion was demonstrated in unoperated dogs injected with histamine and fed detergent complex orally (1). The detergent complex was in direct contact with the gastric juice and cells lining the stomach. The present report is based on work performed to discover what would happen if a part of the stomach was completely separated from the gastro-intestinal tract, and the detergent complex still administered orally. In this case the detergent complex was never in direct contact with the gastric juice nor with the secretory cells of the part of the stomach from which collections were made.

The pouch used for the experiment was the Fogelson modification of a total Heidenhain pouch. In the preparation of such a pouch the stomach is cut across about 2/3rds up in the fundic region. The distal end is inverted, the proximal end narrowed and anastomosed to the jejunum to maintain the continuity of the alimentary canal. A second cut is made across the pylorus. The distal end is inverted and the proximal end (pylorus) brought out through the incision, through which gastric juice is collected.

The dogs were stimulated with histamine solution prepared as follows: 1 ml of Imido "Roche" 1:1000 solution of histamine dihydrochloride was added to 40 ml water, and about 0.5 ml of this dilution was injected subcutaneously into the necks of the dogs every 10 minutes. One and a half hours later gastric juice was collected at 20 minute intervals. If the first two or three

From the Departments of Chemistry and Surgery, The Medical School of Northwestern University, Chicago, Illinois.
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collections were less than 3 ml, then 0.5 to 1.0 ml of the 1/40 diluted histamine solution was injected till an average of 3 ml of gastric juice was obtained for four consecutive collections. Histamine injections were continued throughout the entire experiment. After a constant level of secretion had been obtained, detergent

TABLE I

time, hours	Volume, ml	pH	n/10 HCl (tot.)	Pepsin units	Lysozyme/ml	Lysozyme total	Medication mg RDII
1	27		39				
2	13		45				
3	33		25				
							774
1	13	-10	14				
2	0	-	0				
3	8	-	0				
							2g on day before, and 774
1	15	-10	8	33			
2	15	-8	20	43			
3	9	-4	28	40			
							1.5g on day before, and 600
1	29	-10	7	0			
2	40	-10	35	24			
3	35	0	43	48			
							1.5g on day before, and 600
1	-20	0	-25	0	25	22	
2	0	-15	-7	-41	9	10	
							600
3	4	23	0	-23			
4	16	39	0	0			
4½	32	27	16	27			plus another 1.5g

Each figure represents the average of at least three determinations and is expressed as a percentage of the control values obtained before medication was started.

EFFECT OF DETERGENT ON GASTRIC LYSOZYME

TABLE 2

Collection time	Total Volume ml	Titration of complete sample 1/40 NaOH	Pepsin units (Braetz) / ml
11.25	7.0	32.5	
11.45	7.0	30.9	
12.05	4.0	14.2	
12.25	7.0	29.3	
12.45	7.5	32.5	
1.05	7.5	30.9	Average for standard: 0.386
Perfusion at 1.10 for 30 minutes with 300 mg RD 11 in 50 ml water. Drained for 15 minutes.			
2.15	6.5	12.5	
2.35	7.0	19.4	0.328
2.55	6.5	16.1	
3.15	4.5	10.8	0.328
3.35	5.0	9.1	
3.55	10.5*	22.5	0.312

*Mostly mucous

Average inhibition: Acid 51.1% Pepsin 16.95%
TYPICAL POUCH DOG ASSAY PERFUSING WITH RD 11. (Courtesy Mrs. Shirley Freed). Subcutaneous injection of 1/40 mg histamine base in water every 10 minutes throughout the experiment starting at 9:25 a.m.

complex was fed orally, and gastric collections continued and analysed as before.

The results as given in table 1 seem to indicate a trend of inhibition of total gastric juice secretion, acidity, pepsin, and lysozyme with detergent therapy as the

preceding experiments showed (1). However it does not seem to be necessary for the detergent complex to come into direct contact with gastric secretion or the cells of the mucosa in order to exercise its effect. This means that there is a humoral or/and nervous mechanism concerned and not just a physico-chemical mechanism as previously thought when similar results were obtained on perfusing pouches by mechanical means with a suspension of RD 11 (Table 2). The apparatus used for the perfusion experiments consists of a 50 ml syringe mounted on board. The tip of the syringe is connected to a Y piece with stopcocks on both branches opening alternatively as the plunger ascends and descends. Thus a continuous circulation of the suspension through the pouch is maintained.

SUMMARY

Several analyses of the gastric juice of isolated stomach pouches are presented before and after oral administration of RD 11, a detergent complex. These analyses show a trend of inhibition of the secretion of total available pepsin, and lysozyme, but not much change in the acidity of the secretion. The viscosity increases in the post-medicated samples, as does the amount of mucus per sample. A humoral or/and nervous inhibition mechanism therefore seems to be concerned here.

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THE EFFECT OF A DETERGENT COMPLEX ON THE DEACTIVATION AND RATE OF REAPPEARANCE OF LYSOZYME ACTIVITY IN GASTRIC JUICE FRACTIONAL SAMPLES

OTTO E. LOBSTEIN AND SAMUEL J. FOGELSON, Chicago, Ill.

THE DEACTIVATION or denaturing of enzymes or enzyme systems by detergents has been demonstrated in the past by many authors (1,2,3). Karl Meyer (4) concluded that lysozyme is a causal factor in developing ulceration along the gastro-intestinal tract by acting as a mucolytic enzyme, stripping the intestine of its natural protective coating.

If then a medication could be developed which would inhibit this enzyme and other proteolytic enzymes, a significant advance in ulcer therapy would have been achieved. We believe to have found the answer in a detergent complex.

Detergent therapy was originally begun by David E. Shoch (5) who fed the detergent (purified sodium alkyl sulfate) every hour to maintain a sufficiently high concentration for effectiveness. Dogs injected intramuscularly with 30 mg histamine base in beeswax by the code Wangensteen method (6) die on the average with a perforating ulcer in about 17 days. Shoch, by feeding the test group detergent, in addition to the histamine injection, prolonged their lives to over 290 days, and their ulcer incidence reduced significantly from 88% to 12%.

From the Departments of Chemistry and Surgery, The Medical School of Northwestern University, Chicago, Ill.
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The present report is part of the work performed to eliminate the inconvenience of feeding the detergent every hour and in large doses. The intent was to develop a medication which will release detergent slowly in the intestine, thus serving as a depot to keep the concentration of the detergent high for a long period of time.

Mucosulf, the medication presently under discussion, is a detergent complex consisting of commercial gastric mucus and detergent. We have found that an administration of Mucosulf only twice daily, to histamine injected dogs not only prolongs their survival time to over 216 days (after which they were sacrificed for autopsy) but depresses gastric secretion with practically no ulcer incidence as well (7). The liberation of the detergent from the complex is measured by the amount of inhibition on lysozyme originally present and its reactivation as the detergent breaks up.

Gastric collections were obtained through an Ewald tube from five fasting animals three hours after the histamine injection and feeding of the detergent complex. The first sample (residuum) is therefore the effect after 3 hours medication. Subsequent samples were obtained in one-half hour intervals till a total of four samples was obtained. Lysozyme was determined by a modified Hartsell and Smolelis method. (8,9,10).

The averages of the results were as follows:

3 hour sample:	3.2 μ	lysozyme/ml of gastric juice,
3½ hour sample:	3.8 μ	lysozyme/ml of gastric juice,
4 hour sample:	4.0 μ	lysozyme/ml of gastric juice,
4½ hour sample:	11.2 μ	lysozyme/ml of gastric juice.

Basic (histamine, no medication) 14 μ lysozyme/ml of gastric juice.

From this data it seems apparent that the detergent complex is active for four hours or more.

SUMMARY

Sodium alkyl sulfate combined with gastric mucin is active for over four hours as measured by lysozyme activity in gastric juice. The detergent itself has only a fleeting effect. Medication for ulcer treatment therefore is rendered more effective by feeding the complex.

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THE IMPORTANCE OF LIVER IN THE DIETARY FOR TUBERCULOSIS

J. GERSHON-COHEN, M. D., Eagleville, Pa.

MUCH HAS BEEN reported concerning liver as a valuable dietary factor in disease besides pernicious anemia, but its specific value in the dietary of the tuberculous has yet to be determined. Pottenger ('48) has for years served raw liver in tomato juice to his tuberculous patients. This seems to have been an old idea and can be traced back to the Greeks (Getz '47). Except that liver protein might have a different antibody quality than muscle protein, it otherwise has been found to be exceedingly valuable in tuberculosis of mice (Dubos and Pierce '48). Lewis, Taylor and Davidson ('47), using a digest of liver protein prepared by vacuum drying of a partial hydrolysate of liver pulp, obtained beneficial results in malnutrition, ulcer, nephrosis and cirrhosis. Since a relationship seems to have been found between protein intake and antibody formation (Metcoff, Darling, Scanlon and Stare '48; Cannon, '45; Sako '42) investigation of liver as a source of protein seemed especially worthy of study in this connection. Liver has seemed to have a specific effect in the cure of brucellosis in guinea pigs (Caruselli and Munro '46); and Lewis and Schwartz ('49) have shown that liver aids in the formation of agglutinins and in the prolongation of their presence in the circulation; and that it has a protective action against the toxins of dysentery, tetanus and diphtheria. They also found that a mash of rat liver inhibited the growth of beta hemolytic streptococcus and that each gram of the liver was equivalent in this respect to 0.22 units of penicillin. Besides the specific value of liver protein, it seemed that its rich supply of other food elements, especially of vitamins and minerals, could hardly fail to augment the other therapeutic measures used in the treatment of tuberculosis.

METHODS OF STUDY

The large quantity of liver required for effective therapy in pernicious anemia and the undesirability of giving it parenterally to debilitated patients receiving other forms of treatment led to a search for a palatable con-

centrate which could be taken as a food. Such a product was obtained by cooking fresh chopped liver slowly in a double boiler at a low temperature. When a pound of beef liver, diced and put in a double boiler without water, is allowed to simmer in its own juices for 3 to 4 hours by keeping the water in the lower part of the boiler at the minimal boiling level, about 8 ounces of broth are procured. This broth, as a 4-ounce cocktail, equivalent to a half pound of liver, was served daily for three months to 31 patients at Eagleville Sanatorium, Eagleville, Penna. The controls consisted of 29 patients in the same group and in approximately similar stages of the disease. For both groups, the diet and medication were similar. At the beginning and at the end of this experiment, x-ray studies of the lungs, blood sedimentation rates, sputum examinations, blood counts, weight charts, fever records, careful tabulation of food intake and medication, analysis of caloric, protein, fat, carbohydrate, vitamin and mineral constituents of the diet, and a clinical evaluation of the disease during the three months' period, of each patient, were recorded to determine the clinical effect of the liver supplement in the dietary.

RESULTS

A careful check of each patient's food intake was made daily during the experimental period and then carefully analysed. While it seemed that the diet was in every way adequate, it was surprising to have found it on careful analysis to have been deficient in protein, thiamine, niacin, vitamin C and calcium. Only slight changes were made in this diet, however, since we desired to learn what effect the daily liver cocktail would produce in correcting these deficiencies. Calculations showed that the liver supplement should allow the diet to meet all the caloric requirements, and supply more than sufficient protein, vitamin and mineral deficiencies except for vitamin C and calcium. These were then made good by other slight changes in the diet.

The temperature records, blood sedimentation tests, the hemoglobin and red blood cell counts, and the pulse rates all seemed not to have been influenced by the liver in the diet. The only clinically observed change

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was in the weight tables, and these showed that the individual average gain in weight of the liver group was 3.27 pounds as compared to 1.72 pounds in the control group. This seemingly beneficial result was not otherwise manifested in the clinical improvement of the patients in the liver group, although in two cases spectacular improvement coincided precisely with the liver intake. A similar observation was not encountered in the control group.

DISCUSSION

One advantage of the excessive amount of niacin and riboflavin supplied by the liver was that it tended to preclude the possibility of deficiency of these vitamins in patients under treatment with streptomycin. Seven in each group, or a total of 14 patients, were treated with this antibiotic. Although vitamin deficiency is not necessarily an accompaniment of this therapy, Sumner ('49) recently reported three cases occurring among 18 treated for tuberculosis. No evidence of clinical vitamin deficiency had arisen in 154 of his cases of pulmonary tuberculosis treated with streptomycin in the previous 18 months. The deficiency appears to result from the inhibition of intestinal flora, especially *Escherichia coli*, which is responsible for the synthesis in the body of these vitamins, as was reported previously to occur in patients receiving streptomycin for gastrointestinal infection or in preparation for surgery (National Research Council '46). Also rare, following streptomycin, but possible, are leukopenia (Farrington, Hull-Smith, Bunn and McDermott, '47; Council on Pharmacy and Chemistry '47; Feld '49), and anemia (Dyke and Wallace '48). No specific effect on the leucocyte count was found in our group taking liver who had also been treated with streptomycin.

Some observations already made would indicate that antibiotics can excite a stimulating effect on growth. In the 7 patients receiving streptomycin, instead of a weight gain, an average individual weight loss of one-half pound occurred, while in the 7 patients receiving both streptomycin and liver, an average individual weight gain of two and one-half pounds was observed, so that the weight gain observed in the liver-treated patients would seem to have been more an effect of the liver than of streptomycin therapy.

All the patients in both groups received various vitamins as part of their medical therapy. The fact that only in those cases receiving extra liver in addition, did a gain in weight occur, leads to the thought that liver actually furnished essential nutrients beyond those now identified. King ('50) in a recent summary of food research, suggested that the number of new vitamins yet to be identified can not be stated with any sense of finality, but from studies with chickens, turkeys, mink, cats, rats and pigs, research men are convinced that at least two and perhaps as many as four or five factors remain to be identified in such natural foods as liver, milk, meat and eggs.

Gain in weight of itself may not be the best therapeutic index for judging the effect of treatment in tuberculosis, but clinicians place much emphasis on weight changes as an index of improvement in the course of the disease. Besides using streptomycin, which seems to have a more direct effect on the tubercle bacillus, it might be advisable also to use conjointly the

other antibiotics, especially aureomycin and penicillin, since these antibiotics already have been found indirectly to favor nutrition in the experimental animal.

SUMMARY

1. A supplement of liver broth equivalent to a half-pound of beef liver was given daily to a small group of tuberculous patients.
2. The individual weight gain in this group was almost twice that in a control group.
3. No other beneficial effect was noted clinically during a test period of three months.
4. Weight gains were observed in patients getting streptomycin and liver, while loss in weight occurred in patients getting streptomycin alone.

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THE EFFECTS OF VAGOTOMY AND PHRENICOTOMY ON THE CARDIA*

N. C. JEFFERSON, M. D., C. W. PHILLIPS, M. D., M. M. PROFFITT, M. D. AND H. NECHELES, M. D., PH.D., Chicago, Ill.

SECITION OF BOTH vagus nerves in the chest of animals may be followed by cardiospasm or achalasia of varying severity, depending on the level of the section (3-7). While studying the relationship of respiration to gastro-intestinal mechanisms (1-2), we have observed that disturbances of the cardia could be diminished or abolished by section of the left phrenic nerve. Since no previous work on this problem could be found in the literature, our results are reported below.

EXPERIMENTAL

Normal fasted male and female mongrel dogs were subjected to aseptic operative procedures, using pentobarbital sodium anesthesia. Section of the vagus nerves and of the left phrenic nerve were done transthoracically, using artificial respiration. The operations on the stomach were performed through a midline incision. Postoperatively, fluids and penicillin were administered. Before each operation, the normal motility of the esophagus, the cardia, and the stomach was observed repeatedly, using a barium meal (8) and fluoroscopy. When the animals had recovered from the operation, fluoroscopic observations were continued at weekly intervals.

The degree of cardiospasm and esophageal dilatation is indicated below by the following symbols: (-), no abnormal changes in esophagus and cardia; (\pm), transient minimal food retention in the esophagus and minimal cardiospasm; (+), moderate dilation of the esophagus with food retention and cardiospasm; (++) severe dilation of the esophagus with marked food retention and cardiospasm.

RESULTS

High vagotomy just below the hilus of the lungs resulted in distinct (++) cardiospasm and esophageal retention in every animal (Dogs No. 1-3). ++ retention and cardiospasm were apparent for 139 days in dog No. 1, and then diminished gradually and disappeared during the next 143 days of observation; in dog No. 2, ++ retention and cardiospasm were observed during the entire 4 months period of observation; this animal was reoperated to check whether all vagus fibers had been cut; in dog No. 3, ++ retention and cardiospasm were seen during a period of observation of 8 days.

Low section of all detectable vagus fibers just above the diaphragm was followed by transient one plus or by no disturbance of esophagus or cardia. Thus, in dog 4 no disturbance of the esophagus or of the cardia was seen, but subsequent resection of all visible vagus fibers from just below the hilus down to the diaphragm resulted in + cardiospasm and esophageal dilatation. In dog No. 5, section of all visible vagus fibers just above the diaphragm and gastro-jejunostomy was followed by a short period of + cardiospasm and esophageal retention, after which this disturbance disappeared. A similar operation on dog No. 6 was not followed by disturbance of cardia or esophagus.

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From the Department of Gastro-Intestinal Research, Medical Research Institute, Michael Reese Hospital, and the Department of Surgery, Provident Hospital, Chicago, Illinois.

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In 3 animals a sham operation was performed on the vagus nerves. All visible vagus fibers between the pulmonary hilus and the diaphragm were freed carefully from the esophagus and from para-esophageal tissue. They were elevated gently for inspection, dropped back into place, and the chest was closed. In our opinion, little or no trauma was inflicted upon the vagus fibers, and their blood supply was not interfered with. At autopsy the vagus fibers appeared normal. In dog No. 7, observed for 25 days after elevation of the vagus fibers, a one plus disturbance of the cardia and esophagus was noted only once. In dog No. 8, the procedure was followed by a one plus disturbance of cardia and esophagus for 49 days; then, all vagus fibers from just below the pulmonary hilus to the diaphragm were extirpated. The cardia-esophageal disturbance was not increased in degree, and it disappeared gradually during a period of observation of 56 days. In dog No. 9, the sham operation was followed by cardia-esophageal disturbance of one plus degree during a period of observation of 2 months.

Simultaneous section of all vagus fibers just below the hilus of the lungs and of the left phrenic nerve just above the diaphragm was performed in 3 animals (No. 10-12). In dog No. 10 no disturbance of the cardia or of the esophagus was seen during a period of observation of 9 months; in dog No. 11, no disturbance was noted during the first month of observation, after which time a slight and transient disturbance appeared. In dog No. 12, no disturbance was seen during the first period of observation of 50 days, followed by a slight and transient disturbance during the next 34 days, which then disappeared completely, and normal function of cardia and esophagus was observed during the next 175 days. In one animal, No. 13, the left phrenic nerve and all the vagus fibers were sectioned just above the diaphragm, and no disturbance was noted during 3 months of observation.

The following procedures were not followed by disturbances at the cardia or of the esophagus, and are not included in Table 1. In 2 dogs, the left phrenic nerve was excised from the hilum of the lungs down to the diaphragm, so that no regeneration could occur. These animals were observed for 10 months after the exeresis. In 3 dogs, the left phrenic nerve was cut just above the diaphragm and at the same operation the left vagus trunk was cut at the level of the pulmonary hilus. These animals were observed for 7, 8, and 10 months respectively after operation. In 5 animals, the left phrenic nerve was sectioned at the hilus of the lungs, and they were observed for 3 weeks postoperatively. Various gastric operations did not affect cardia-esophageal function; 2 dogs with a Finney pyloroplasty, were observed for 3 weeks following the operation.

DISCUSSION

Our results confirm that vagotomy high in the chest is followed by cardiospasm and esophageal retention,

which may last for ten months. On the other hand when the left phrenic impulses were interrupted, and the left diaphragm was paralyzed, this condition was not seen or it was present only to a slight degree.

When the vagi were cut low in the chest, disturbance of the cardia and of the esophagus might or might not occur. If seen, the disturbance was transient and, when the left phrenic was also interrupted, it did not appear.

The interruption of one vagus only, did not appear to affect the cardia or the esophagus. It is of interest that section of the vagus nerves above the diaphragm may be followed by a late disturbance of cardia and esophagus (dog No. 4). This has been seen occasionally in ulcer patients following subdiaphragmatic vagotomy.

The finding that mere elevation of vagus fibers can lead to disturbance of the cardia and esophagus was surprising (dogs No. 7, 8, 9). One dog subjected to this procedure (not in Table 1) died 78 days later. All typical symptoms of complete high vagotomy, such as vomiting and a very atonic stomach were present. At autopsy, a dilated stomach, about 3 times the size of a normal stomach, was found.

The consensus of opinion regarding surgical treatment of cardiospasm has been expressed by Shaefer (9), who stated that sympathectomy, vagotomy, longitudinal incision of the muscle coat of the lower esophagus, Heineke-Mikulicz incision and suture of the

lower esophageal musculature, transverse and longitudinal plication, transabdominal retrograde dilatation with gastrostomy, and spurcrushing techniques, have been found ineffective. Esophago-gastrostomy is the surgical treatment of choice. Whatever the cause of cardiospasm or achalasia, it is agreed that the disturbance begins at the level of the cardia and proceeds progressively upwards, with more dilatation of the esophagus as the disease process continues. Interruption of phrenic impulses in the treatment of dysfunction of the cardia is not mentioned.

The possibility that interruption of left phrenic impulses can produce a patulous cardia has been demonstrated in the human by Dailey, Jefferson and Phillips (10), who observed that after combined subdiaphragmatic vagotomy and left phrenic crush in the neck, the cardia was patent, as evidenced by aspiration of air from a tube in the stomach of 2 postoperative patients. This was noted by the surgeon and by the patients, who observed continuous aspiration of air through the mouth, when suction was applied to the Levine tube. Also, these patients (5 up to date) were entirely free of all complications often seen to follow vagotomy (1,2,10).

The observations of Hwang, Essex and Mann (3), appear to be pertinent: "The most important change after vagotomy at a high level in the dog is a complete inhibition of the peristaltic activity of the lower part of the esophagus. The peristalsis of the lower

TABLE I
EFFECT OF VAGOTOMY AND PHRENICOTOMY ON THE CARDIA

No.	Sex	Weight Kg. 17	Vagotomy at hilus of lungs	Date 2-17-48	Left Phrenicotomy	Date	Esophageal Retention and cardiospasm		Degree
							From	To	
2	M	15	at hilus of lungs, avulsed from hilus to diaphr.	5-13-48 6-17-48	— —	—	2-23-48 5-17-48 6-21-48	7-12-48 12-13-48 9-20-48	++ + ++
3	M	11	all vagal fibers avulsed from hilus to diaphragm	1-24-49	—	—	1-31-49	2-7-49	++
4	M	15	just above diaphragm avulsed from hilus to diaphr.	5-12-48 6-17-48	— —	—	5-17-48 6-21-48	6-7-48 9-20-48	— +
5	M	11	just above diaphragm and gastro-jejunostomy	12-17-48	—	—	1-31-49	1-10-49 2-7-49	+ —
6	M	12	just above diaphragm and gastro-jejunostomy	12-17-48	—	—	1-10-49	2-7-49	—
7	M	15	all vagal fibers elevated from hilus to diaphragm	8-5-48	—	—	8-7-48	8-30-48	— + one observation
8	M	12	all vagal fibers elevated from hilus to diaphragm all vagal fibers avulsed from hilus to diaphragm	3-30-48 6-17-48	— —	—	6-1-48 6-21-48	6-1-48 8-16-48	+
9	M	15	all vagal fibers elevated from hilus to diaphragm	7-9-48	—	—	7-12-48	9-13-48	+
10	F	21	at hilus of lungs	1-8-48	1-8-48 just above diaphr.	3-2-48	3-2-48	12-13-48	—
11	M	15	at hilus of lungs	5-11-48	5-11-48 just above diaphr.	5-17-48 6-21-48	6-17-48 8-30-48	— ±	
12	F	15	at hilus of lungs	3-30-48	3-30-48 just above diaphr.	4-5-48 6-8-48 7-19-48	5-25-48 7-12-48 1-10-48	— ±	
13	M	16	just above diaphragm	5-11-48	5-11-48 just above diaphr.	5-17-48	5-17-48	8-16-48	—

two-thirds of the esophagus was dependent on the extrinsic vagal supply. "The vagus seems to contain both inhibitory and motor fibers to the esophagus."

Since both clinical and experimental observations would imply that the vagus is the motor nerve of the esophagus (3,9), and since it has been demonstrated by Dailey et al. (10) that interruption of the left phrenic impulses appears to relieve disturbances of the stomach and of the cardia following vagotomy, the idea of left phrenic crush for cardiospasm may be considered for persistent functional cardiospasm, especially in early cases, before fibrosis of the esophagus and the cardia has occurred.

SUMMARY AND CONCLUSIONS

Section of the left phrenic nerve alone was not followed by cardiospasm or disturbance of the esophagus.

High section of both vagi, just below the pulmonary hilus produced cardiospasm.

Low section of both vagi, just above the diaphragm, had either no effect on cardia or esophagus, or it was followed by transient cardiospasm.

Simultaneous section of the left phrenic nerve and of both vagi high, was followed by no or by only slight and transient cardiospasm.

Sham operations consisting in elevation of all vagal fibers on the lower esophagus resulted in moderate cardiospasm in a number of dogs.

Stomach surgery per se, like Polya gastrectomy and

Finney pyloroplasty, was not followed by disturbances of the esophagus or of the cardia.

After interruption of phrenico-vagal impulses in the human, it was observed that the cardia was patulous.

As a result of these data, we recommend that left phrenic crush be tried in clinical cases of cardiospasm, especially in cases where fibrosis of the esophagus has not as yet occurred.

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SEGMENTAL CATHARSIS

MARK M. MARKS, M. D., F. I. C. S.*¹, Kansas City, Mo.

THE NORMAL RATE of digestion requires from twenty-four to thirty-six hours. This time may be altered by the type and quantity of food and fluid consumed as well as by medication taken for purposes of bowel stimulation to prepare the bowel for surgery, for x-ray examination, and for other studies.

Preparation of the hollow viscera with salines or saponifiable vegetable oils although effective within one to three hours also disturbs digestion. By these methods the entire length of the gastro-intestinal tract is forcibly cleansed of its contents. The action of the agents employed for this purpose on fluid and electrolytic balance is unpredictable (1). The permeability of the intestinal membrane to chemical and bio-chemical toxins is known. Fatal toxicity has been reported following use of magnesium sulfate as a cathartic (2).

Castor oil, one of the oldest known purges, when ingested is quickly converted to soap, and by the free alkali thus produced creates such irritation that much fluid is drawn into the intestinal tract to dilute it. Whether soap is taken orally in this manner or by enema the irritant effect is the same. There is a definite leucocytic increase in the secretions. The

mucosa becomes engorged and reddened, the mucus is thinned to ineffectiveness making it difficult to differentiate between an early typhoid effect, ulcerative colitis in its initial stage, allergic manifestation, or a chemical or thermal burn.

Many years ago Joachlimaglu (3) and more recently Vierthaler and von Blumenthal (4) demonstrated the absorption of soap, serum and glucosides of various drugs from the lower bowel. Rectal absorption bypasses the liver since the venous flow draining that part empties directly into the abdominal circulation affording a rapid transmission into the general blood stream. They pointed out that the rate of rectal absorption was close to that of the subcutaneous route and second only to intra-muscular infusion.

Since the direct examination of the rectum and lower sigmoid colon rarely extends beyond twelve to fourteen inches, flushing thirty-two feet of the digestive tract of its rightful contents seems unnecessary and harmful, especially since visceral shock and painful tenesmus often accompany purgation. This knowledge prompted me to adopt another means of preparing the lower bowel segment whenever those parts were to be examined. This is done by utilizing the well known safe hydrogogue action of sodium and bisodium phosphate in solution.** Two ounces of this mixture added to four ounces of tap water and a half ounce of hydrogen peroxide are easily instilled into the rectum while the patient is in knee chest or inverted position. Within

*From the Section on Proctology, Department of Surgery, Menorah Hospital, Kansas City, Missouri.

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**Trade name Fleets Phospho-Soda, product of Fleets Co., Inc. Lynchburg, Virginia.

two to five minutes the defecating impulse becomes strong and the left half of the bowel empties completely without pain or spasm. The patient returns from defecation with a clean, non-irritated mucosa that has become relaxed and easily accepts the passage of the examining instrument.

The method of action of this mixture on the bowel appears to be two-fold, a. by relaxing the bowel musculature, b. by producing a mucorheic and hydrogogue effect. The peroxide, even in such dilute concentration, mildly stimulates peristalsis, yet does not produce a caustic action or irritation of the mucosa.

Previously, in the attempt to cleanse a patient of impacted barium sulphate or feces, large quantities of irritant solutions of soap, glycerine or oxgall were used as enemas. Normal peristalsis was interrupted because of distention, and long after bowel action was obtained, atonia of the bowel musculature persisted (5). These solutions are often harmful. Runge and Hartman (6) proved that soap, in particular, may damage the intestinal mucosa. Six out of twenty patients developed demonstrable melena after soap suds enema. Castle and co-workers showed that anti-anemic activity of the intestines is lost if the bowel is thoroughly washed. That rectal irrigations can be not only injurious but ineffectual as well is demonstrated by a representative case report.

Mrs. J. L., age 74, was admitted to the hospital with a diagnosis of sigmoid impactions following gastro-intestinal x-ray studies. For two days repeated enemas with saline, soap suds, glycerine had been used with little or no effect. During the past day there was no return of instilled solutions. With the patient in knee chest position a mixture of two ounces of anhydrous sodium phosphate solution, four ounces of water and one-half ounce of hydrogen peroxide was slowly instilled into the rectum. The position was maintained for five minutes after which the patient was helped to a commode where she passed, with little discomfort, a large bolus of inspissated barium and much liquid stool. Since the rectal ampulla had been empty it seems that much of the previously instilled material had been directly absorbed.

As an office procedure two or three ounces of the mixture is poured into the examining proctoscope if on

examination the patient is found poorly or non-prepared. This is expedient not only for the patient who could not easily return after a cleansing enema at home or hotel, but saves the apprehensive patient the ordeal of reporting for a second examination. Because of its effectiveness in small quantity this enema has been of extreme value to cleanse the bowel in cardiacs and in post-operative cases to lessen distention of the major bowel.

In four years of constant use of this method in office and hospital procedure for preparing or cleansing patients for examinations or prior to surgery, no untoward effects have been seen. The solution as described and means employed have proven a distinct advantage in safety and effectiveness over previously used preparations.

CONCLUSIONS

A safe and simple method of cleansing the lower bowel segment is described.

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THE PROCTOLOGIC HISTORY

R. V. GORSCH, M. D., New York, N. Y.

ALTHOUGH THE proctologic history is usually only suggestive of the diagnosis, nevertheless a confidential relationship requires attention to the patient's subjective complaints. The psychological status should be assessed. Questions should be direct and designed to elicit corroborative information of diagnostic significance. Secretory, direct and reflex sensory and motor disturbances, particularly of the gastrointestinal tract, require careful evaluation in their etiological significance to proctologic disorders.

A detailed surgical history is important in pilonidal and recurrent perianal suppuration, fistula, fissure and in anal stenosis and malignancy. Previous injections in hemorrhoids, fissure and pruritus ani may be significant. A not inconsiderable number of proctologic complaints date from previous unsuccessful or inadequate surgery.

FAMILY HISTORY

The family history should include inquiry concerning

hemorrhoids, tuberculosis, diabetes, polyposis, prolapse, enteropatosis, malignancy and particularly allergy.

PREVIOUS HISTORY

Allergy, eczema, contact dermatitis, fungous infections, venereal, genitourinary, gastrointestinal, and gynecological conditions are of particular proctologic significance. In the present and personal history inquiry should be made regarding diet, alcohol, tobacco, bowel habits, use of cathartics and vitamins and other drugs. A sudden change in bowel habits suggests malignancy. Additional interrogation following the proctologic examination may occasionally re-evaluate symptoms which were erroneously ascribed to other conditions. Failure of the proctologic examination to fully confirm the patient's complaints indicates further consultation. The following symptoms require detailed investigation.

Rectal bleeding, the commonest and most important symptom, usually compels medical consultation. It de-

mands a thorough and careful investigation. It may be stressed that proctosigmoidoscopic examination of rectal bleeding either establishes the diagnosis or excludes the visualized areas. Excluding hemorrhoids, fissure and polypi it is usually significant of a serious and destructive lesion. Hemorrhoids are the commonest source of bleeding but they may be confusing. Diagnosis and treatment, particularly surgical, with an overlooked proctoscopically diagnosable ulcerative colitis, amebiasis and malignancy is still too often a sad commentary on inadequate and omission examinations. The character and amount of bleeding may be significant. That from low anal lesions is usually clear, from higher sources it is usually mixed with cellular detritus, mucus, pus or feces. Massive hemorrhage however, from colonic or gastric conditions may be confusing. Melena is usually undiscovered until tested for. In about 30% of the cases bleeding arises from lesions in the upper gastrointestinal tract, in 70% from lesions in the colon or rectum. Of the latter, carcinoma, colitis and diverticulosis are the commonest causes. Bleeding from anal lesions is usually recognized early by the patient, that admixed with the stool may be overlooked for some time. Separate sources may occasionally be present. Lesions above instrumental visualization may present special diagnostic difficulties and require careful review of history, special laboratory x-ray investigation and occasionally exploratory laparotomy. In some instances the source remains obscure despite all examinations.

Stone reported 72 cases of massive melena of obscure origin, in 31 of which no cause for hemorrhage could be found, 20 a possible source and in 21 the source was proved. The commonest causes of bleeding in the respective age groups is in general as follows:

Infants and children: 1. Polypi; 2. Meckel's diverticulum; 3. Prolapse; 4. Intussusception; 5. Pinworms; 6. Blood dyscrasias; 7. Duplication of bowel and duodenal ulcer, rarely. Young Adults: 1. Hemorrhoids; 2. Fissure; 3. Anal ulcers; 4. Colitides: a. Chronic Ulcerative; b. Mucous colitis; c. Proctitis-Sigmoiditis; d. Bacillary Dysentery; e. Amebiasis; f. Tuberculous; g. Diverticulosis; h. Duodenal and gastric ulcers; i. Agranulocytosis. Adults: 1. Carcinoma; 2. Proctitis; 3. Factitial ulcerations; 4. Impactions, foreign bodies and hysterical bleeding are rare causes.

MUCOPURULENT DISCHARGES

Mucoid discharge, anal relaxation and incontinence is a common complaint in nonulcerated tumors, early amebiasis, shistosomiasis and particularly in functional secretory disturbances of neurogenic origin. Likewise in so-called mucous colitis, irritable or unstable colon, etc. Purulent discharge suggests a localized proctitis, occasionally gonorrheal, anorectal sinuses or anal ulcerations, lymphogranuloma venereum or other granulomata. Serous discharge or simple moisture is common in pruritus ani, sometimes profuse in the acute allergic response.

PAIN

Pain is a common and important symptom and is usually indicative of an anal lesion in contrast to the rectum where the lesions are usually silent until well advanced. The cases usually fall into one of two groups. Those with common anorectal pathology and

those in which the cause is obscure and the pathology entirely extrarectal. In the latter group reflex and psychogenic factors are very important. Fissure abscess and thrombotic hemorrhoids are the commonest painful conditions usually aggravated by defecation. Pain in fissure varies in character, intensity and duration depending primarily on the depth of the fissure and the accompanying muscle spasm. It is variously described as dull, aching, tearing, burning, etc. It may be provocative of remote reflex symptoms, abdominal cramping, dysuria, coccygodynia, sciatica and backache. A defecatory inhibition may provoke a high degree of neurosis. Pain in abscess usually depends on its proximity to the anal musculature. In the subspincteric, perianal, marginal and triangular space abscesses, the pain is usually more acute, constant and not relieved until the abscess is drained. Early abscess formation may be overlooked. Ischiorectal and supralevator abscesses are usually well advanced before pain becomes a prominent symptom. Fistula only becomes painful when secondary abscess formation occurs.

In thrombotic hemorrhoids of the external variety, the intensity of the pain depends on the tension produced by the clot on the anoderm and the accompanying muscle spasm. In multiple or complete circumferential hematomata the pain may be severe. Internal hemorrhoids when thrombosed and in the grasp of the sphincter become exceedingly painful from the increasing engorgement and the anal spasm. Infected internal hemorrhoids, prolapse, fistula, enlarged papilla, cryptitis and proctitis may produce a mild degree of pain usually referred to as an ache. Cryptitis is commonly considered a very painful condition. In our experience however, cryptitis is uncommon and pain is usually not prominent unless definite ulceration supervenes in the anal canal with sinus or fistula formation. In anal ulcerations excluding fissure—the pain varies with the extent of the ulceration in the anal canal and the muscle spasm. These include chancre, chancre, epitheliomata, pyogenic and tuberculous ulceration.

Mild degrees of tenesmus rather than pain occur in proctitis, ulcerative colitis, foreign bodies, stricture, impactions and low rectal or anal tumors. Pain referred or localized to the coccyx is a fairly common complaint referred to as coccygodynia, coxalgia, etc. It may be complicated with a status spasticus of the levator ani and pyriformis muscles. Direct trauma to the coccyx with residual bony or ligamentous injury is the commonest cause. It may however be obscure or reflexly symptomatic of functional or organic disease of the lumbosacral spine.

RECTAL PAIN OR HIGH RECTAL PAIN

This requires careful exclusion of extrarectal conditions, prostatitis, sacral tumors, endometriomas, and intrapelvic disease. Usually the pain or discomfort is entirely psychogenic in origin and other neurotic manifestations are evident—the psychopathogenesis in these cases is obscure and their symptomatology may be unwittingly ascribed to cryptitis, hemorrhoids, anal spasm, etc. Surgery may aggravate their symptoms and afford the basis for a permanent neurosis.

PROCTALGIA FUGAX—ANAL CRAMP, ETC.

This is a severe paroxysmal type of pain occurring commonly in male adults. The onset is usually nocturnal, sudden and without previous warning. Examination of the rectum following the episode is usually

negative. Although the etiology is not clear, there appears to be some reflex psychogenic factor relative to the prostate and bladder trigone or the uterus causing severe tonic spasm of the levator ani and anorectal musculature. Hot baths, rectal massage, antispasmodics and local injection of Anucaine with dilatation usually affords relief.

POST-OPERATIVE PAIN

A persistent and recalcitrant type of pain may result from excessive scar formation with stricture of the anal canal which occasionally follows hemorrhoidectomy. A neurosis may supervene and the patient develop a rectal hypochondriasis or cancerphobia not readily amenable to further proctologic surgery. The neurotic factors require careful evaluation in these cases.

DEFECATORY COMPLAINTS

These are apt to be neglected. They include a sense of anal obstruction or restriction, tenesmus, incomplete evacuation, sudden anal contraction "biting off the stool," repeated desire to defecate and finally partial or complete inhibition of defecation. Commonly overlooked etiological factors in these disturbances are a capacious rectum, rectocele, impactions, rectal or sigmoidal prolapse, or intussusception, prostatism and lower cord lesions. The feces by their odor, consistency or color may be the chief complaint. Odor depends on changes in the diet. When described as foul, it usually stems from malignancy. Ammoniacal, from putrefactive stools, or it may be psychic. The consistency also varies with the diet, but when sufficiently pliable, it may be ribbon-shaped in rectal stricture, stenosis of the anal canal and in anal spasm. Semisolid or fluid stools may be referred to as diarrheal or dysenteric stools variously mixed with mucous, blood or pus. Tarry and clay colored stools have obvious implications.

PROTRUSION

This is a common complaint. Conditions which protrude or prolapse only during defecation or on straining should be distinguished from those which are more or less constant. The former include first or second degree prolapsing hemorrhoids, hypertrophied papillae, pedunculated polypi, villous tumors, rectal prolapse and rectocele; the latter usually include large skin tags, anal hematomata (external thrombotic hemorrhoids), condylomata, mucosal prolapse with relaxed sphincters and internal hemorrhoids completely prolapsed and occasionally strangulated. Protrusions which are not painful or bleed and recede spontaneously after defecation may escape notice for some time. Low rectal tumors, coccygeal or levator hernias, are rare causes of protrusion.

REFLEX OR REFERRED SYMPTOMATOLOGY

The projection of symptoms from the anorectal region to the genitourinary, gastrointestinal and orthopedic fields and vice-versa, may be confusing. Prostatism, prostatic calculi, posterior urethritis, trigonitis, pelvic tumor, malpositions of the uterus and adnexa, advanced rectocele may reflexly produce bearing down, spurious and incomplete evacuation sensations, chronic anal spasm and frequency, urgency and dysuria. The pain and anorectal muscular spasm of the chronic anal fissure may be referred to the lumbar spine. Attacks

of epigastric pain, nausea and abdominal cramping may result from sigmoidal prolapse or intussusception. The relief sometimes afforded patients suffering from gastrointestinal spasticity, so-called spastic colitis, constipation, etc. by a simple operation probably has its basis in the abolition of proctogenic reflexes. All of these symptoms require careful evaluation and the indications for surgery should be definite.

PRURITUS ANI

Itching or pruritus which includes other dysaesthesiae variously described as pricking, burning, irritation, etc., is a common complaint. Patients usually defer medical advice until pruritus interferes with sleep, occupation or social activities. The skin usually has secondary pathological changes which confuse the true etiological basis. In general, the pruritus patient falls into one of two general categories. In the former the pruritus, etc., is usually symptomatic of a common anorectal condition, including a local skin sensitization-allergy. These cases are usually responsive to simple specific measures. In the latter group, the pruritus is psychogenic and is a disease, the so-called intractable pruritus or pruritus essentialis.

DIARRHEA AND DYSENTERY

Diarrhea, or a tendency to diarrhea, particularly of a recurrent nature, more often than constipation, may be indicative of more or less serious mischief usually in the gastrointestinal tract, but particularly in the rectum or colon where the disease is frequently of an organic and destructive nature. Diarrhea and dysentery are only relative terms at best, applicable to an increase in the number of evacuations ranging from five to six to thirty or more a day, to say nothing of the quantity, character and nature of the dejecta as regards pus, blood, mucus, parasites and casts; pathological discharges which at the outset of disease may be entirely absent but whose absence is not an excuse for the omission of a digital examination of the rectum and sigmoidoscopy. An amebic dysentery, for example, may go on to the hepatic abscess stage with a mild exacerbating diarrhea as its only symptom.

From the purely proctological viewpoint, diarrhea, especially that occurring in the morning, is usually indicative of colitis, stricture and neoplasm. On the other hand, any one of these conditions may be present without diarrhea. Inflammation of the rectum and colon are usually classified into specific and nonspecific types. It would take us too far afield to go into a detailed discussion of these but it is worthy of note that chronic irritable colon, catarrhal colitis, commonly called mucous colitis, is frequently an irritative reflex condition, the underlying cause of which may be readily overlooked; e. g., chronic appendicitis, enteroptosis, prolapse of the sigmoid, floating kidney and particularly conditions entailing a drag on the mesenteries. Patients afflicted with mucous colitis should not be hastily stamped as neurotics. Of the specific inflammations of the rectum, gonorrhea is apt to be overlooked.

Diarrhea in stricture usually occurs late and yet it may be the first symptom leading to a digital examination of the rectum or a proctosigmoidoscopy. It indicates that the stricture is accompanied by more or less ulceration from secondary invaders. Stricture, whatever the underlying cause, invariably demands

Frei and Wasserman test,—x-ray of the colon to exclude its multiple occurrence, particularly before surgical intervention. In the non-specific ulcerations of the rectum and colon, diarrhea is one of the earliest and commonest symptoms but it bears no constant relation to the nature or extent of the ulcerative process. It is more apt to be the morning type of diarrhea, the accumulative discharges during the recumbent posture gravitating to the rectum on arising and stimulating the call for evacuation. In neoplasms of the rectum and colon diarrhea commonly alternating with constipation is frequently the initial symptom of malignancy, the importance of which does not seem to be sufficiently appreciated. Symptomatically, diarrhea is common in a great variety of diseases, but there is no symptom particularly when the lower gastrointestinal tract is under suspicion which more emphatically demands a thorough proctosigmoidoscopic examination. It is likewise not sufficiently appreciated that an examination of the stool for blood, ferments, predominating bacteria, the degree of digestion, parasites, amebae, etc., is at times indispensable, not only to the correct diagnosis but also to the adoption of the proper therapeutic measures. Entamebiasis and amebic dysentery are not confined to tropical climates and the diagnostic errors in these conditions are due solely to an omission in the use of the proctoscope or a failure to examine repeated stools or the scrapings directly from the ulcers or mucous membrane. Cultures from the rectal and colonic mucosae are often of great diagnostic aid and the subsequent ministration of antibiotics and autogenous vaccines afford therapeutic measures of value. Cultures should be preferably made at the earliest opportunity because the initial offending organism may be rapidly overgrown by secondary invaders or attenuated by antibiotic and chemotherapy.

That the lower bowel may harbor a focus of infection has been well established.

CONSTIPATION

One of the commonest of all symptoms and at times the most deceptive, is constipation and all too infrequently is it recognized as such. We are perhaps too prone to give to constipation the attention it merits, and quite naturally so, not only because of its extreme commonness and its ready relief with drugs, but also because of its frequency as a symptom at the outset or during the course of other diseases.

Constipation is frequently associated with flatulence, colic, loss of appetite, indigestion and other symptoms, which are apt to creep into the foreground of the clinical picture. Care, however, should be taken not to overlook more or less serious pathology and unwarily ascribe it to a functional basis. This is altogether too frequently done. All etiological factors in the gastrointestinal tract, particularly in the anus, rectum and sigmoid should be excluded by a thorough proctosigmoidoscopic examination combined with x-ray.

It is well to bear in mind in this regard the difference between constipation and obstipation. A failure to do so may lead to harmful and unnecessary catharsis, at times precluding surgery especially in organic lesions of a malignant nature. Constipation alternating with

diarrhea is often the initial symptom of rectal or colonic cancer which may be entirely overlooked during the favorable period for treatment; the symptomatology being neutralized, so to speak, by the unwary use of cathartics until the diagnosis of a hopeless malignancy. This partially explains why rectocolonic cancer is scarcely ever diagnosed under six months from its onset. Cathartics are unfortunately at times considered a harmless expedient by both physician and laity. Too frequently they take the place of a thorough examination and investigation into the habits, diet, exercise and hygiene of the patient. The almost universal prevalence of constipation bespeaks its complex and protean causes. It is a condition readily relieved by drugs but in which promiscuous drugging may incidentally prove harmful.

PROCTOGENIC OBSTIPATION

From the purely proctological point of view constipation is perhaps more a preclinical cause than a symptom and it is the evacuation of the constipated stool, large hard and irregular from its abnormal retention in the rectal ampulla or sigmoid (proctostasis), which provokes anorectal pathology, from which hemorrhoids, fissure and infections commonly result.

It is to be observed that in the mechanism of defecation a proper correlation must exist between the relaxation of the anal sphincters and the contraction of the expulsive forces from above and that an imbalance or a dystimulation on either side of this neuromuscular mechanism may be invoked by many pathological conditions directly or reflexly and either intraintestinal or extraintestinal. For example, a reflex sphincter spasm from a urethral stricture, an enlarged prostate, a mucous colitis or a neurosis may prevent the proper relaxation or produce a hypertonicity of the anal musculature and result in constipation with the evacuation of a hard stool entailing much straining and trauma. Herein lies a large proportion of the constipation as seen by the proctologist.

The uniformly excellent results obtained in anal fissures following incision of the sphincter muscles, which incidentally, will often completely cure a long standing chronic constipation by overcoming a constant hypertonicity of these muscles, can undoubtedly be attributed to a readjustment in the mechanism of defecation, and an adequate anal outlet. There are many conditions which directly or reflexly cause a spasm of the anal sphincters and the muscles of the rectum or colon resulting in more or less constipation and dyschezia. It is essential that these be kept clearly in mind both in examination and treatment.

Commonly overlooked causes of constipation are enteropisosis, incompetence of the ileocecal valve, chronic appendicitis, dilatations and angulations of the colon, adhesions, anomalous bands, lower cord lesions and particularly prolapse of the sigmoid.

Sometimes the underlying etiological factors in constipation are complex and often confusing. The futility of its proper treatment and its positive exclusion as a symptom of more or less remote underlying pathology without a careful digital and proctosigmoidoscopic examination, supplemented by the x-ray can be well appreciated.

ABSTRACTS ON NUTRITION

SCHILLING, R. F., HARRIS, J. W. and CASTLE, W. B.: *Observations on the etiological relationship of achylia gastrica to pernicious anemia. XIII. Hematopoietic activity of vitamin B_{12a} (vitamin B_{12b})*. Blood, VI, 3, Mar. 1951, 228-232.

Vitamin B_{12a} derived from vitamin B₁₂ by catalytic hydrogenation, is as potent a hematopoietic agent as vitamin B₁₂ when administered parenterally to patients with pernicious anemia in relapse. As in the case of vitamin B₁₂ and B_{12b}, vitamin B_{12a} is potentiated by simultaneous oral administration with normal human gastric juice. Observations on one patient suggest that vitamin B_{12a}, like B₁₂, will arrest the progress of subacute combined degeneration of the spinal cord in pernicious anemia.

LUCIA, S. P. and SIMMONDS, NINA: *The normal diet; variations in disease conditions, food, and in the management of hepatic diseases*. Am. Pract. & Dig. Treat., 2, 3, March 1951, 238-240.

The authors show how the "normal" diet may be quickly altered for the purpose of treating various abnormal conditions and further present suggestions for diets in the management of diseases of liver. These latter diets are characterized by high protein intake, liberal carbohydrate, medium use of fat, calories to maintain desired weight, abundance of all vitamins, particularly crude preparations of vitamin B complex with added thiamine, niacin, riboflavin and choline.

GUTENKAUF, CHAS H.: *Beriberi heart in Iowa veterans*. Circulation, III, 3, 352-362, March 1951.

The author, working in the Dept. of Internal Medicine, Veterans Administration Hospital, Des Moines, Iowa, describes in detail the cases of five alcoholic patients with varying amounts of cardiac failure, polyneuritis and cardiac enlargement which conform to the criteria for diagnosis of beriberi heart disease. Inasmuch as beriberi is often a reversible form of heart disease, as in the present cases, its early diagnosis is important. All of them gave histories of inordinate addiction to alcohol and of skimpy food intake, with 0.15 to 0.26 mg. thiamine per 1,000 calories, as contrasted with the estimated minimum requirement of 0.25 to 0.35 mg. per 1,000 calories. The author points out that thiamine deficiency may at times result from increased metabolism due to any cause, e. g. hyperthyroidism or infection. The majority of the patients were anemic, but he does not indicate whether any of the anemias were macrocytic. Reversal of the cardiac symptoms with return of the heart size to normal often was dramatic. The neuritis was more persistent and required longer for improvement. The treatment consisted essentially in the administration of 10 to 100 mg. thiamine daily, preferably by the parenteral route, high protein diet and the use of supplements of all vitamins. Digitalis was used when the heart was greatly dilated. Mercurial diuretics and moderate sodium restriction were necessary in markedly edematous patients. Frequently, thiamine has produced dramatic cardiac response when digitalis and mercurials failed.

PROCTOR, B. E.: *Nutrition and food technology*. Nutrition Rev., Feb. 1941, 9, 2, 33-34.

Proctor, of the Department of Food Technology at the Massachusetts Institute of Technology, states that current, modernized methods of food preparation have resulted in improvements in the flavor, color and nutritive value of foods and cites frozen citrus products. The consumers are now more conscious of the nutritive values of various prepared products, and most producers strive to improve this factor. Improvements have been perfected in heat exchange thus permitting more rapid heating and subsequent cooling of both liquid and solid products during processing. Experiments are under way to incorporate antibiotics in food products as a means of

reducing the conventional time and extent of heat processing. Another field of current interest is the application of cathode rays or electrons to sterilize food without heat. Thus far, irradiation causes losses in nutritive value comparable to that resulting from heat. Probably in time, food technology will greatly improve food preparation.

DAVIDSON, J. D., MEYER, W. and KENDALL, E. E.: *Effect of choline upon experimental canine arteriosclerosis*. Circulation III, 3, 332-338, March 1951.

It was not possible to demonstrate that choline had any effect on 9 dogs on an arteriosclerosis-producing regimen of cholesterol and thiouracil feeding. Dogs receiving the largest amount of choline that they could tolerate did not differ from control dogs in the serum level of cholesterol or phospholipids, in the degree of fatty infiltration of the liver nor in the extent and severity of the arterial lesions.

RIMMERMAN, A. B. and HALPERN, A.: *A comparative study of sodium-free salt substitutes*. Am. Pract. & Dig. Treat., 2, 2, 168-171, Feb. 1951.

After a careful chemical and clinical analysis of four outstanding and nationally advertised salt substitutes (Diasal, Cosalt, Neo-curtasal and Gustamate), the authors conclude the most desirable is the product containing chiefly potassium chloride (Diasal). Some contain ammonium either in an inorganic salt or combined with an amino acid, and this element seems to limit the utility of the product in cooking or baking, and also may affect the bronchial mucosa. Diasal more closely approximates sodium chloride in taste, pour-quality, appearance and stability.

AYLETT, S. O.: *A new operation for chronic peptic ulcer*. Brit. Med. J., Mar. 3, 1951, 454-56.

In 13 patients (3 had gastric ulcer, 9 duodenal ulcer and one a double ulcer) Aylett devised and performed an original operation. The first part of the duodenum is divided and the distal stump invaginated. The jejunum and its mesentery are divided, and the distal cut end is anastomosed to the proximal cut end of the duodenum. Finally, the proximal end of the jejunum is implanted into the anterior wall of the stomach. Postoperatively, the course of these patients was very smooth, without pain and without any dumping syndrome. He feels that efforts to avoid the serious operation of partial gastrectomy may lie along the lines indicated by his operation.

SCOTT, R. B. and WATSON, G. M.: *Discussion on the pathogenesis and treatment of megaloblastic anemias*. Proc. Royal Soc. Med., XLIII, 12, 953-960, Dec. 1950.

Folic acid is effective in the treatment of all the megaloblastic anemias with this one exception, that it does not prevent neural change in pernicious anemia. Yet it is a good treatment in pernicious tape worm anemia, megaloblastic anemia of total gastrectomy, nutritional megaloblastic anemia, megaloblastic anemia of statorrhoea, of intestinal stricture, of pregnancy, of infants and in achreatic anemia. Vitamin B₁₂ and liver extract are completely effective in pernicious anemia alone. In some types of megaloblastic anemia, only variable results may be obtained with vitamin B₁₂ and it is quite ineffective in the megaloblastic anemia of pregnancy and in achreatic anemia. Castle's extrinsic factor probably is vitamin B₁₂ itself. The intrinsic factor's role appears to be that of rendering vitamin B₁₂ absorbable. Present hypotheses fail to explain completely the pathogenesis of Addisonian pernicious anemia. Theoretically, total gastrectomy should invariably produce pernicious anemia, but this is not the case. Some patients with no intrinsic factor do not develop the disease and there have been found a few cases of pernicious anemia possessing intrinsic factor. There is some tendency to revert to the earlier "toxic" ideas and to incriminate the increased and altered ileal flora, attributing to these microorganisms (especially *B. Welchii*) a toxic action or a serious role of competition for vitamins. In cultures of normal bone marrow, the addition of folic acid speeds up the normal process of ery-

thropoiesis, whereas the addition of vitamin B₁₂ has no such effect. Furthermore the addition of pernicious anemia blood serum has an inhibiting effect, and one investigator found that such addition will produce megaloblasts from normal marrow cells. Pernicious anemia may therefore be more than a simple deficiency disease. Intestinal infection is probably due for a new investigation at present to extend the observations of Davidson, of Herter, of Cojell, and others.

GRAHAM, H. B.: *Corpulence or obesity in childhood and adolescence*. Med. J. Australia, II, 18, Oct. 28, 1950.

As a result of long-continued private research on obesity, Graham has developed and here presents useful charts for assessing normal weights for height and age. In treatment he gives no diet sheets but stresses general dietary principles,—increased protein and growth-promoting items and restriction in fats, sugars and starch foods. In spite of professional prejudice against the use of thyroid extract, he uses it frequently as an emergency measure to get the patient started and encouraged. He has seen no bad results from the use of large doses of thyroid in these patients and believes that adipose young people possess an unusual tolerance to it. He uses

D-amphetamine sulfate periodically in cases finding it difficult to control appetite. Exercise is strongly recommended. Close personal contact with patients is maintained. Emphasis is placed on the importance of psychotherapeutic measures. Graham believes his work to be of great importance because the unchecked sequelae of over-weight amount to a major human catastrophe which is "a reproach to us all."

SOBEL, A. E., ROSENBERG, A. and KRAMER, B.: *Enrichment of milk vitamin A in normal lactating women*. Am. J. Dis. Child., Dec. 1950, 932-943.

The vitamin A content of the milk and blood of human mothers was determined periodically following the administration of vitamin A in aqueous and oily mediums. The vitamin A content of human milk rose considerably within 12 hours following the administration of vitamin A in aqueous medium, but there was no such significant rise after 24 hours in the cases where the same vitamin A was given in oily solution. Aqueous dispersion obviously improves absorption. When corresponding blood vitamin B levels are obtained with larger amounts of oily vitamin A compared to the aqueous, the transfer to milk is similar.

BOOK REVIEWS

THE LOW FAT, LOW CHOLESTEROL DIET. E. Virginia Dobbin, Helen F. Gofman, Helen C. Jones, Lemore Lyon, and Clara-Beth Young, Doubleday & Co., Inc., Garden City, N. Y., 1951, \$3.45.

Thomas P. Lyon, M. D., and John W. Gofman, M. D., state, in their introduction to this book, that accumulated evidence suggests that the low fat, low cholesterol diet may be beneficial to those individuals who are susceptible to, or who already have, arteriosclerosis. The mildness of this statement arms it against too much criticism, although a number of research students of the disease do not feel that restricted diets are justifiable in arteriosclerosis in the present state of our knowledge. But the authors present special diets which, however valuable or useless they may prove to sufferers, could be eaten with impunity by normal persons. One's impulse therefore is to suggest these especially worked-out diets to arteriosclerotics on a trial-and-error basis,—content in the thought that, unlike many restricted regimes, they can do little harm even if they do not produce tangible benefits. Certainly, the method of presenting the subject is admirable, clear and readable, making the book a suitable one to place in the patient's hands for his own guidance and education. The problems of obtaining suitable food products and how to prepare them are herein solved. The subject is approached from many useful angles, and the text is often broken up into question and answer form. We predict considerable popularity for this volume both with the profession and the public, although the inherent difficulties in constructing such diets will undoubtedly be felt by anyone attempting it.

CANCER AS I SEE IT. Henry W. Abelmann, M. D., Philosophical Library, New York, 1951, \$2.75.

Abelmann, who believes cancer is caused by a mold organism displaying pleomorphism has written a book which may prove interesting to both the public and the profession, although his apparent dogmatism robs the work of a persuasive quality it might otherwise have enjoyed.

OCCUPATIONAL FACTORS IN THE ETIOLOGY OF GASTRIC AND DUODENAL ULCERS. Richard Doll and F. Avery Jones, 96 pages. His Majesty's Stationery Office, London, Eng., 1951. 2 shillings, 6 pence (429 Oxford St., London, W. 1):

During an investigation by combined socio-medical means, 316 peptic ulcers were diagnosed among 4,871 men, giving an incidence of 6.5 per cent, and 18 among 1080 women giving an incidence of 1.7 percent. Poorer persons were more prone to gastric ulcer than wealthy persons, but there was no social distinction in duodenal ulcer. No gastric ulcers were diagnosed under the age of 25, and above this age the ratio rose progressively with increasing age and with descent in the

social scale. For all men the ratio of gastric to duodenal ulcer was 1 to 2.2. Doctors showed a high incidence while farmers showed a low incidence. Anxiety over work was complained of more frequently by men with ulcers, especially foremen, than by men without ulcers. Probably conditions of work do not play a large role in the etiology.

This survey is very interesting and valuable and touches a great many aspects of peptic ulcer not alluded to in this review. In the reviewer's opinion, the methods of diagnosis used were satisfactory. The deficiency of ulcers in agricultural workers, the social gradient in gastric ulcer and the positive correlation between anxiety and duodenal ulcer provide a stimulus for further investigations.

THE BIOCHEMISTRY OF INOSITOL. Edward R. Weidlein, Jr. 53 pages. Mellon Institute, Pittsburgh, 1951 (Gratis).

Weidlein's contribution, as Bulletin No. 6 of the bibliographic series from Mellon Institute is an important book to those physicians interested in inositol. The entire chemistry of this substance is more ably covered than ever before and its therapeutic potentialities also are detailed. Doctors interested may obtain the book gratis by writing to Mellon Institute and enclosing 6 cents in stamps.

ANTIBIOTICS AND CHEMOTHERAPY. Vol. 1, No. 1, April 1951. Washington Institute of Medicine, 667 Madison Ave., New York 21, N. Y. \$10.00 per year.

The first issue of the monthly medical Journal, Antibiotics and Chemotherapy, is a very excellent one and the names of the contributors are among the most outstanding in this field. Two new antibiotics are described—fumagillin and rhodomycin. Experiences with the more familiar antibiotics are given. Kendall describes the development of cortisone. The journal includes the hormonal field. Unquestionably this new publication will prove popular with busy physicians since, until now, the contributions on the title subject have been spread throughout so many different journals.

GASTROENTEROLOGICAL BIBLIOGRAPHY DIARRHOEA DUE TO DEFICIENT NUTRITION. By Prof. Dr. Fernando Milanes Alvarez of the Faculty of Medicine in Havana. A book containing 329 pages, 39 of which are illustrated. Editorial Libreria Selecta, Havana, Cuba, 1950.

This book written by Prof. Dr. Fernando Milanes, of Cuba, constitutes a great honour for Panamerican medical science, with decisive repercussion in the extracontinental medical field. However, if in view of its fruitful teachings we call it a writing, by its representing a school, it constitutes a real treatise in the new medical cause, constituted by the intestinal diseases connected directly with nutritive deficiencies. Over

four lustrums ago, in the Francisco María Fernández Clinic, together with Professor Dr. Bishé Alberni, the Master, Milanes, initiated his studies on enteroanemic syndromes, which to explore practically and theoretically a pathology which was being kept concealed from clinical semiology, and from laboratories, due to its peculiar anatomy and physiology. These investigations* acquire extra importance with the discovery of the fractions of the B complex and in particular of Vitamin B₂ which constitute real diagnostical therapeutic. With various disciples, Milanes, together with the great American investigator, Spries, study the different clinical and pharmacological actions of the sprue and other diarrhoeal syndromes which later on will constitute the therapeutic armamentarium

*Discovery made in the United States.

of a number of syndromes of not only medical importance, but also of great social importance.

We estimate the writing by Milanes to be one of the best guides which the medical class possess in such a difficult and complex theme, and it is worth pointing out that within such a well expressed, didactic interpretation, so useful to scientists as to students, specialists and investigators, who construct the nosological and therapeutic bases, really original bases, of the Habana school.

The group of Gastroenterologists, constituted by García López, A. Rodríguez, A. Monéndez, López Toca, T. Aramburu, E. Morales, C. Castellanos, J. Benínamo, Hernández Beguerie, León Blanco, Aníbal Causa and others, under the same direction of Master Milanes, have achieved with great success, a book of great signification at our present scientific juncture.

Dr. Juan Nasio

EDITORIAL

WHAT IS ADEQUATE RESECTION?

In the current literature concerning the surgical treatment of complicated duodenal ulcer, one finds frequent reference to the term, "Adequate resection" (usually meaning removal of 3/4 of the stomach), with the object of reducing hydrochloric acid secretion to a non-pathologic level (which might be likened to subtotal thyroidectomy).

The fact that peptic ulcer recurs *after* gastric resection suggests that the resection was *inadequate*.

This prompts the question: How (other than by post-operative recurrence or non-recurrence) is the adequacy of the resection determined before or at the operation?

In the evolution of subtotal gastrectomy, the degree of the proximal resection has extended, and is extending, in a "shift to the left", from pyloromyotomy, through antrumectomy to 75%, the present generally accepted adequacy. Removal of more has been suggested.

Recently Wangenstein, "Peptic Ulcer Etiology and Surgical Therapy" (Transactions and Studies of the College of Physicians of Philadelphia, 4th Serv. V. 18 #1, Apr. 1950) p. 6 recommends removal of all but 10% or 5% of the acid secreting area, that is all but a mere fringe of gastric remnant at the cardia. It is hoped, for technical and clinical reasons, that the 100% resection, with resulting complete achylia, will prove to be unnecessary.

What may be adequate for one case, may be definitely inadequate in another, under different conditions.

It would therefore seem that "Adequate" resection depends, not on a fixed percentage of the acid secreting fundus, but upon various symptoms; physical, laboratory, x-ray and operative findings.

If too much is removed, probably no great damage has been done but if too little is removed, the result will be unsatisfactory and further treatment called for.

A decision as to the "Adequacy" of the resection may be as important as was the fundamental distinction between ulcers, complicated (calling for operative treatment) and uncomplicated (to be treated by non operative management).

A related question concerns the usually routine removal of the distal (alkaline secreting) antrum, because of acceptance of the unproven Edkin's Theory ("The chemical mechanism of the gastric secretion," American Journal of Physiology, 34:133 1906) i.e. secretion of "Gastrin an Histamine-like substance that acts as an hormonal stimulant to fundal hydrochloric acid secretion."

Geo. Kalfahs (British Medical Journal Dec. 25, 1948 p. 109) and others have shown that this substance, or a similar histamine-like substance, is secreted *also* by the duodenum, perhaps by Brunner's glands which are similar to antral glands, except in their relationship to the submucosa.

Ivy Grossman and Baerach "Peptic Ulcer" 1950 p. 34, state, "The pyloric mucosa contributes to, but is not the sole site of origin of the humoral agent arising in the stomach."

Therefore it would seem reasonable to expect compensatory action that might nullify the supposed gains of antrumectomy which is followed by definite disadvantage, such as loss of sphincter and of normal gastrointestinal continuity.

W. C. Alvarez in an editorial (Gastroenterology Mar. 1951 p. 445) discusses "Gastrin Hypothesis Again."

It is sometimes overlooked that the distribution of parietal cells in dogs and in humans, is not necessarily the same.

It would seem advantageous, in future "Follow-up" studies, to divide subtotal resection into: Distal, with antral removal, and Proximal, with retention of the antrum.

F. Gregory Connell, M. D.
Oshkosh, Wis.

GENERAL ABSTRACTS OF CURRENT LITERATURE

KEY, J. A.: *Blood vessels of a gastric ulcer.* Brit. Med. J., Dec. 30, 1950.

By suitably injecting arteries and veins of stomachs removed because of ulcer, and subsequent examination by the technique of microarteriography in which x-ray films of the specimens are made, Key found that chronic peptic ulcers presented an obtrusive ischemia due to vascular occlusion of a wide-spread nature. This occurs in the base of the ulcer and along the line of the lesser curvature deep to the mucosa. In acute ulcers, however, there is an acute vascular disturbance chiefly under the mucous membrane—a hypervascularity and not an ischemia.

VAN DONGEN, M. A.: *A case of congenital diaphragmatic hernia in a new-born infant successfully treated by immediate operation.* Arch. Chir. Neerland, II, 3, 274-277.

In a 12 hour old infant, congenital diaphragmatic hernia was diagnosed by x-ray. The left half of the thorax was occupied by loops of intestine. Immediate operation was performed since Hedblom had shown that 75 percent of such patients died before the end of the first month. The intestine and spleen and part of the colon which had entered the chest via Bochdalek's foramen were easily replaced but closure of the defect had to be done at a second operation on the third day. Postoperatively pyloric stenosis developed because of torsion of the long

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splenic hilus around the pyloric antrum. The spleen was repositioned and fixed. Healing took place after the child had suffered from wound diphtheria. In spite of the complications, the child now is growing well.

ROBIN, J. D., BARGEN, J. A. AND WAUGH, J. M.: *Congenital megacolon of a man 54 years of age*. Proc. Staff Meet. Mayo Clin., 25, 26, Dec. 20, 1950.

A physician 54 years of age was cured of congenital megacolon by a subtotal colectomy. He had developed large fecaliths with recurrent bouts of mild obstruction for many years, but controlled the condition tolerably well by large enemas, proving that good health and an active and productive life can be maintained through careful management. He is one of the oldest patients having congenital megacolon to come to operation. Microscopic examination of the specimen revealed an absence of the myenteric plexus in the non-dilated end of the colon. The criteria of congenital megacolon include, 1) severe and unremitting constipation since birth, 2) colonic dilatation and hypertrophy of a high degree and, 3) a typical clinical picture.

POST, J., GELLIS, S. AND LINDENAUER, H. J.: *Studies on the sequelae of acute infectious hepatitis*. Ann. Int. Med., 33, 6, Dec. 1950, 1378-1397.

114 cases who had had acute infectious hepatitis were observed during a 21 month period from 7 to 70 months after the acute illness. Most patients made complete recoveries. Persisting digestive symptoms were usually associated with chronic liver disease, the commonest physical signs of which were jaundice, palpable liver and spider angiomas. The most commonly encountered abnormal laboratory tests were elevated icterus index, and/or bilirubin and positive cephalin flocculation reaction. Cirrhosis of the liver may develop 14 months after the initial illness.

PAULLEY, J. W.: *Ulcerative colitis: a study of 173 cases*. Gastroenterology, 16, 3, Nov. 1950, 566-576.

The author spent 4 years in the intensive study of ulcerative colitis in 173 cases and ended up minimizing the value of surgery, chemotherapy and antibiotics, but convinced of the actual value of psychotherapy. He enumerates the highly characteristic personality traits discovered in these persons,—particularly mother dependency. The physician must act temporarily as a mother substitute. Reassurance is the keynote of treatment. The chance of psychotherapy being successful is highest in young men. The incidence of colitis among Jewish people was twice the expected rate. Studies by the author tend to show that personality traits in Crohn's disease, idiopathic steatorrhea and chronic relapsing amebiasis have a close relationship to those found in colitis and even duodenal ulcer.

GARCIA, M. F., FILHO, A. DE M. AND BURGER, H.: *Trial of beta (4-hydroxy-3, 5-diiodophenyl) alpha-phenyl-propionic acid in the treatment of taenia infestation*. Rev. Brasileira de Gastroenterol., 2, 5, 1950, 519-528.

18 patients were given the propionic acid derivative (Priorax) for tapeworm. 13 had good results, the taenia and the solex being eliminated. 5 patients did not eliminate the parasite. The dose used varied from 6 gm. ("double dose") to 3 gm. ("simple dose"). 12 of the patients were given the double dose and 10 of them received a saline purgative on the following morning and eliminated the parasite. The other 2 received no saline purgative and only one of them passed the worm. In 6 patients the smaller dose was used, four of them receiving also the purgative, but only one passed the worm. The drug was well tolerated, producing minimal toxic effects in some instances. It was noted that other parasites also were eliminated,—endameba histolytica, *E. coli*, *Giardia*, *Leishmania* and *Ascaris*.

BROWN, C. H. AND COLLINS, E. N.: *The use of Bantline in the treatment of duodenal ulcer*. Cleveland Clinic Quart., 17, 4, Oct. 1950, 234-241.

A new anticholinergic drug, Bantline, was prescribed for 30 patients with duodenal ulcer. Of the 25 presenting active symptoms, 19 obtained definite and immediate symptomatic relief. Of 18 patients originally showing craters, healing of the craters occurred in 17, as demonstrated on progress roentgenography. About 1 in 10 have to discontinue the drug be-

cause of dryness of the mouth, visual difficulties, or slowness of urination. In the presence of bladder neck obstruction, Bantline should not be used. The fact that the drug performs a "medical vagotomy" makes it valuable in duodenal ulcer. Its value in other G. I. conditions is not so obvious. The authors do not report on the effects of Bantline in controlling acidity but will probably do so in a subsequent article.

WEBSTER, J. J.: *Adrenal cortex in liver disease*. Ann. Int. Med., 33, 4, October 1950, 854-864.

In an effort to improve hepatic disease by altering the metabolism of carbohydrate and protein, thus protecting the liver and stimulating reparative processes, Webster used an oil extract of the adrenal cortex which was the equivalent of 2.0 to 2.5 mg. of 11-dehydro-17-hydroxycorticosterone per c.c. Judging from Webster's case reports, the effects of giving from 2 to 15 c.c. daily of this extract for a few days or at most, weeks, cured the hepatic disease with dramatic suddenness, whether the disease was cirrhosis, homologous serum jaundice, chronic infectious hepatitis, or arsenical hepatitis. There was no recurrence of liver dysfunction after cessation of the treatment. Certain undesirable side effects, as in cortisone therapy, were noted.

GROSS, J. B., COMFORT, M. W. AND WALLACE, E. E.: *Study of fecal excretion of fat and nitrogen, and external pancreatic function in cases of primary parenchymatous hepatic disease*. Proc. Staff Meet. Mayo Clin., 26, 1, Jan. 3, 1951.

The fecal excretion of fat and nitrogen as well as the pancreatic response to secretin were studied in 10 cases exhibiting primary hepatic disease (hepatitis and cirrhosis) with controls. From this study it was concluded that steatorrhea usually occurs in cirrhosis and during the active phase of hepatitis. In 2 cases of serious hepatitis the data indicated that fecal excretion of fat reverts to normal during recovery. While steatorrhea is the rule in hepatitis and cirrhosis, azotorrhea rarely occurs. On the basis of secretin responses, external pancreatic insufficiency does not occur in primary parenchymatous hepatic disease. The most reasonable explanation for the steatorrhea is the impairment of formation and secretion of bile salts as a result of hepatic parenchymal damage.

YATES, C. W., MORETON, R. D. AND COOPER, E. M.: *Doube-contrast studies of the colon with special reference to preparation and fictitious polyps*. Radiology, 55, 4, Oct. 1950, 539-544.

Fictitious polyps may be due to fecal material, mineral and vegetable oil globules, non-water-soluble grease, as from enema tips, and air bubbles. The patient, in taking preparatory enemas, is instructed to use soap on enema tip rather than grease. Supper on the previous evening is omitted and at 6 p.m. one ounce of castor oil is given. In the morning at 6 a.m. three small soapsuds enemas are taken and a small breakfast eaten at 7, reporting to the x-ray laboratory at 8 a.m.

ISAAC, F., WILKINS, F. B. AND WEINBERG, J.: *Traumatic and related types of diaphragmatic hernia*. Radiology, 55, 4, October 1950, 527-533.

Diaphragmatic hernias are frequently encountered in x-ray practice, many being asymptomatic. The commonest variety is the esophageal hiatal hernia. Other types may be caused by trauma with laceration of the diaphragm or by opening up of congenital weak spots, and they may masquerade as other pulmonary or pleural lesions in the base of the left lung field. When a deformity of the left diaphragm is noted in the chest film, or when there is an unexplained density in the left base without other evidence of pulmonary infection, the possibility of diaphragmatic hernia should be considered.

FOX, H. M.: *Significance of the gastrointestinal tract in emotional maturation*. Rev. Gastroenterology, 17, 10, October 1950, 865-879.

Fox convincingly shows that the functions of eating and of defecating, along with the individual's interest in mouth and anus as sensitive areas, exert normally an influence on the emotional development. Oral receptivity, oral aggression and food in association with the sense of security, constitute a psychic plane which is never altogether transcended in adulthood and which is capable of lending various orientations to mature mentality depending on the specific details of one's earliest experiences. The same applies to rectal and anal activity.

Food may become a substitute for denied affection, leading to obesity. The symbolic meaning of food, of medicines and diets is important, and should be thoroughly understood by the physician.

GORDON, E. T.: *Acute ruptured appendicitis and peritonitis with urinary symptoms.* U. S. Armed Forces M. J., 1, 10, Oct. 1950, 1191-1193.

A young sailor complained of urinary urgency, dysuria and abdominal pain, with temp. 101° F., pulse 95, W. B. C. 18,250, and tenderness and rigidity in the right lower quadrant. The urine showed only a few pus cells per h. p. f. and an occasional erythrocyte. The case was diagnosed as acute appendicitis due to a perforated appendix and confirmed by laparotomy. Colon bacillus pus was present. There was a perirectalitis caused by the appendix being adherent in the midline to the apex of the bladder. He made a perfect recovery through the use of streptomycin and penicillin, Wangensteen suction and intravenous fluids. The author reviews the various mechanisms by which urinary system irritation and infection may result from appendicitis.

KOONCE, D. B.: *Postoperative cholangiography.* Southern Med. & Surg., 112, 10, Oct. 1950, 321-324.

The x-ray study of the extrahepatic bile passages is limited to the operative and postoperative phases, and is especially useful in ensuring that stones have not been left in the common duct after cholecystectomy. The contrast medium may be injected into the gall bladder, the severed cystic duct, the common duct directly, or through a T-tube placed in the common duct. The use of x-ray technic at the time of operation has many limitations and difficulties, so that it cannot be accepted as a routine procedure. However, x-ray should always be used post-operatively in those cases in which a T-tube has been inserted in the common duct, to reveal stones that have been missed and to indicate the time at which the T-tube should be removed.

MILLER T. G.: *Functional disturbances of the digestive tract from the point of view of the general practitioner.* Southern Med. & Surg., 112, 10, October 1950, 313-316.

The family doctor, knowing the personal backgrounds of his patients, is thereby qualified to spot functional elements in illness, yet it is true that most functional disturbances of the digestive tract develop on an organic basis, particularly ulcer and gall bladder infection. Purely functional disturbances, without recognizable organic basis, constitute only 27 percent of all patients complaining of indigestion. In many patients extra-abdominal affections play a real role in the illness and must be recognized and treated. Ulcerative colitis always develops in a person with a deep-seated emotional problem of some sort. Emotions are thoroughly capable of producing functional disturbances and these, if long continued, may result in organic disease. General practitioners are usually able to rationalize for the patient the simpler emotional problems that produce symptoms.

HINKEI, C. L.: *Gas-containing biliary calculi.* Am. J. Roentg. & Rad. Ther., 64, 4, Oct. 1950, 617-623.

Central fissuring occurs in certain gall stones *in vivo*. It is readily observed by x-ray in stored dried calculi, and is most common in non-opaque, cholesterol-rich stones. When the central fissure contains gas, it is possible to make a roentgenographic diagnosis of cholelithiasis, even though the calculi are non-opaque and the gall bladder cannot be visualized on cholecystography. In such cases star-like shadows alone are seen in the region of the gall bladder. The fissures seem to result from physical phenomena and the gas (whose nature is not known) finds its way into the central voids of the stone by diffusion.

SZASZ, T. S.: *Psychosomatic aspects of salivary activity. II. Psychoanalytic observations concerning hypersalivation.* Psychosom. Med. XII, 5, 1950, 320-331.

Hypersalivation occurs commonly in the course of normal pregnancy. Salivary and gastric secretions usually change in the same direction. Deteriorated schizophrenes show an increased rate. In young children parotid secretion rate is high but decreases with age. In animals, sexual excitation is accompanied by increased salivation. Psychoanalytic observations

suggest that increased salivation in man may be brought about by an unconscious desire to nurse at the breast. Hypersalivation may be interpreted as another example of a fundamental neurophysiologic mechanism—"regressive innervation."

WHITE, C.: *Errors involved in the counting of blood cells.* Med. J. Australia, Sept. 16, 1950, 434-439.

The error due to chance distribution of the cells in a hemocytometer cannot be eliminated, but it can be reduced in relative size by increasing the number of cells counted. The use of different pipettes or different counting chambers from time to time, introduces a second important source of errors, which are not reduced by the counting of more cells. In a differential count there is an inevitable error due to chance distribution of the various types of cells in the blood sample, as well as the way in which the various types are distributed over the blood film. It is an advantage to use the direct method of counting leukocytes when feasible, e. g., staining eosinophiles with an eosinophilic stain and counting them in the counting chamber.

FILHO, P. DE S. C.: *Lipoma sub-mucosa do colon descendente (submucous lipoma of the descending colon).* Rev. Brasileira de Gastroenter., 2, 5, 1950, 507-518.

Eight new cases of intestinal submucous lipoma are presented and discussed, one of them symptom-producing, located in the descending colon, with chronic invagination, and surgically treated. The other 7 cases were observed among 7,000 autopsies made between 1937 and 1949 in the Medical School of São Paulo, Brazil. Special attention is devoted to the x-ray findings and the proctoscopic appearances of these tumors.

LEIBOVITZ, A.: *Infant diarrhea.* U. S. Armed Forces Med. Jour., 1, 11, Nov. 1950, 1265-1271.

From a careful study of infantile diarrhea, the author concludes that hospitals sometimes become a hotbed of the disease because of such factors as crowding, lack of trained personnel, and faulty techniques in the handling and feeding of infants. In the home most cases occur among the low-income group because of neglect, malnutrition, poor sanitation, and ignorance. The disease may be caused by a host of bacterial and viral agents. Future research may reveal a number of agents not presently recognized, but proper sanitation will continue to be the most important factor in preventing the disease.

SEEDORF, E. E., POWELL, W. N., GREENLEE, R. G. AND HARTMAN, J. J.: *Priodax and pseudoalbuminuria.* Radiology, 55, 5, Nov. 1950, 740-742.

Following the ingestion of 6 tablets of priodax (gall bladder dye), the urine of many patients on the following morning contains sufficient of the dye to be precipitated by the procedures used for detecting albumin. These false "albumin" reactions disappear within 2 or 3 days. The presence of priodax in the urine may be differentiated by acidifying or boiling the specimen, which causes it to disappear. The appearance of the drug in the urine does not indicate renal irritation, but is due to the fact that the drug is always excreted via the kidney.

HIGHTOWER, N. C. AND CODE, C. F.: *The quantitative analysis of antral gastric motility records in normal human beings, with a study of the effects of neostigmine.* Proc. Staff Meet. Mayo Clin., 25, 26, Dec. 20, 1950.

Antral gastric motility was recorded from human beings by the use of a balloon. Three types of motility waves were designated, viz., types I, II and III, each type having its own peculiarities. After the intramuscular injection of 0.5 mg. of neostigmine, there was a slight increase in the duration and height of the nonrhythmic type II waves.

HIGHTOWER, N. C., WALTERS, W. AND MORLOCK, C. G.: *The effects of urethane of Beta-methylcholine chloride (urecholine) on antral gastric motility in man following vagotomy.* Proc. Staff Meet. Mayo Clin., 25, 26, Dec. 20, 1950.

Antral gastric motility was recorded from 13 patients who had had vagotomy for peptic ulcer. After an hour's control period, 5.0 mg. of urecholine was administered subcutaneously and recordings continued for another hour. It was found that urecholine increased the total activity by increasing the number of type II waves.

**VARIDASE* — STREPTOKINASE-STREPTODORNASE
LEDERLE**

Another *Lederle* "First"—VARIDASE Streptokinase-Streptodornase, announced today by Lederle Laboratories, makes available to the medical profession for the first time an enzyme product combining Streptokinase and Streptodornase in a single clinically-proven product.

VARIDASE dissolves clotted blood, viscous pus, and fibrinous accumulations within the body. It is useful in surgery and in skin grafting by aiding in the removal of dead tissue and hastening tissue regrowth. Furthermore, it clears the way for treatment with aureomycin and other antibiotics.

Streptokinase serves to activate an enzyme in the human serum which reacts on fibrin and brings about a rapid dissolution of blood clots and fibrinous exudates. Streptodornase, an enzyme, acts directly on the main constituents of pus that constitute 30 to 70 per cent of the sediment of purulent exudates. VARIDASE has no effect on living cells and may be injected directly into a body cavity or applied locally. It is not recommended for intravenous use.

VARIDASE is indicated in the treatment of hemothorax, hematoma, empyema, osteomyelitis, draining sinuses, tuberculous abscesses, infected wounds or ulcers, severe burns, and other chronic suppurations. Its effectiveness in the treatment of other conditions is being extensively investigated and gives promise of a far wider range of usefulness.

VARIDASE is supplied in vials containing 100,000 units of Streptokinase and 25,000 units of Streptodornase. List price per vial is \$5.00.

*Trade-mark

THE NEW YORK ACADEMY OF SCIENCES HOLDS TWO-DAY CONFERENCE ON THE INFLUENCE OF HORMONES ON ENZYMES

Recent studies on the effects of hormones on tissue enzyme concentration were discussed at the opening Sessions of a two-day Conference, which started Tuesday,

June 5, and continued Wednesday, June 6, in the auditorium of the New York Genealogical and Biographical Society, 122 East 58th Street, New York. This Conference is held under the auspices of the Section of Biology of The New York Academy of Sciences, 2 East 63rd Street. Dr. Ralph I. Dorfman of The Worcester Foundation for Experimental Biology, Shrewsbury, Mass., and Dr. Eli D. Goldsmith, Chairman of the Section of Biology and Research Coordinator, New York University, presided as Conference Chairmen.

In their introduction, Drs. Dorfman and Goldsmith discussed the pioneer work pertaining to the hormones and the basic findings in enzymology. They emphasized that the part played by the hormones in the regulation of animal growth and functions has accelerated rapidly during the past few years, and that it has become increasingly apparent that a large part of the action of these hormones may be explained by the relationship of the hormones to cellular enzyme systems. They expressed the hope that as a result of this Conference, the mass of available information arising from research conducted in the many laboratories would be summarized and correlated and would thus serve as a source for additional productive research to follow.

Fourteen prominent authorities from various parts of the United States and Canada are presenting papers on their studies in this field.

At the opening Session (Tuesday, June 5, at 9:30 A.M.), under the chairmanship of Dr. Gregory Pincus of The Worcester Foundation for Experimental Biology, papers were presented by Dr. C. D. Kochakian, Oklahoma Medical Research Institute and Hospital, Oklahoma City; Dr. W. H. Fishman, Tufts College Medical School, Cancer Research and Control Unit, Boston; Dr. S. L. Cohen, University of Minnesota, Minneapolis; and Dr. W. W. Umbreit, Merck Institute for Therapeutic Research, Rahway, N. J.

The second Session, which opened at 2:00 P.M., was presided over by Dr. A. C. Stadie of the University of Pennsylvania, Chairman. The speakers at this Session were Dr. C. S. Gordan of the University of California Hospital, San Francisco;

Dr. M. Hayano of The Worcester Foundation for Experimental Biology, Shrewsbury, Mass.; Dr. H. Jensen of the Medical Department, Field Research Laboratory, Fort Knox, Ky.; Dr. R. M. Hochster of the Research Institute, The Montreal General Hospital, Montreal, Canada; and Dr. H. A. Lardy of the University of Wisconsin.

E. CLAIBORNE ROBINS

Recognition from industry and education alike came during April to E. Claiborne Robins, president of the rapidly expanding A. H. Robins Co., Inc., of Richmond, Va.

Mr. Robins was elected to the board of directors of the American Pharmaceutical Manufacturers Association during the recent meeting of the association at Boca Raton, Fla.

Almost simultaneously, he received a high honor from his home community in being named to the board of trustees of the University of Richmond. Mr. Robins is also a trustee of the projected Richmond Memorial Community Hospital, first vice-president of the Richmond Chamber of Commerce, member of the board of directors of the Richmond Rotary Club and president-elect of the alumni association of the Medical College of Virginia.

THE JAM HANDY ORGANIZATION

Importance of the individual physicians in local civilian defense programs and the need for integrating community programs with state and national planning, so far as practicable, is the theme powerfully presented by the motion picture, *They Also Serve*, produced for the American Medical Association by the Jam Handy Organization.

They Also Serve is shown to doctors throughout the nation under the auspices of the AMA to encourage doctors, through their local medical societies, to organize health and medical plans and services in their own communities so that they may be ready for either national emergency or local disaster. The production was supported by a grant from the Becton-Dickinson Foundation.

This motion picture, a 17-minute

black and white production, includes scenes of recent disasters—the Texas City explosion and fire, the New York Harbor naval disaster, the Miami and New England hurricanes, and the Japanese earthquake. There are also scenes from European war areas. The picture warns that in addition to the constant danger of local disaster, there is today the possibility, at least, of an enemy "sneak attack," and that the confidence of the citizens of a community in the local physician makes the community a logical starting point for any disaster relief planning program.

The essential facilities and services which must be restored or activated immediately in case of disaster are cited as communications, police, fire, engineering, transportation, rescue and first aid services, medical and health services, sanitation, evacuation of population, human welfare, radiological defense, and chemical warfare defense. Each of these is taken up in sequence and discussed individually as the picture progresses.

The final message of the film to the doctor is that "only by exhaustive, thorough planning in each medical society, can our physicians always be ready for any emergency. We must act now—begin to plan—plan well—get ready—and wait."

Assisting The Jam Handy Organization in the planning of the film are Col. W. L. Wilson, Medical Corps, special assistant to the Surgeon General, United States Army; Dr. Norvin C. Kiefer, chief of health emergency planning, Public Health Service, and medical advisor to the Office of Civil Defense Planning; Dr. Frank E. Wilson, national medical director, the American Red Cross; Dr. James C. Sargent, chairman, American Medical Association Council on National Emergency Medical Service, and Ralph P. Creer, secretary of the committee on medical motion pictures, American Medical Association.

This film is available to the medical profession from the Committee on Medical Motion Pictures, American Medical Association, 535 N. Dearborn Street, Chicago 10, Illinois.

N.S.M.S.

Election to the Board of Directors of the National Society for Medical

Research of Dr. William Henry Sebrell, Jr., is announced today by Dr. Andrew C. Ivy, secretary of the Society.

Dr. Sebrell is Medical Director of the U. S. Public Health Service and Chief of the Division of Physiology, National Institutes of Health.

He is especially interested in research in nutrition and is the author of numerous reports of research on vitamins and nutrition, and of sections in several medical textbooks on nutrition and deficiency diseases. He has been a member of a number of national and foreign governmental nutrition commissions, including the League of Nations.

A. M. A. PANEL OFFERS IDEAS TO HELP "AGING" AMERICA

"Pre-separation" and "post-separation" programs to train over-age employees for retirement offer American business an opportunity to help solve the nation's growing problem of an aging population, according to Philip N. Scheid, director of training for the Pullman-Standard Car Manufacturing Company, Chicago.

Mr. Scheid addressed a symposium on aging, held at the 100th annual convention of the American Medical Association, which closed Friday, June 15 in Atlantic City. Ideas put forward by a panel drawn from several fields included the scientific, psychological, sociological and industrial aspects of the problem.

Dr. Theodore G. Klumpp, president of Winthrop-Stearns Inc. and a member of the New York City Mayor's Advisory Committee on the Aged and other civic and professional groups dealing with geriatrics, presided.

The symposium also included Dr. Robert A. Moore, dean of the Washington University School of Medicine, St. Louis; Dr. Leonard E. Himler, neuropsychiatrist at Mercywood Hospital, Ann Arbor, Mich.; Prof. Clarence J. Vela of the School of Public Health, Michigan University; Dr. Charles Franco, associate medical director of Consolidated Edison Company; and Miss Ollie A. Randall of the Community Service Society of New York.

AGE OF 146 REALIZABLE OBJECTIVE

Introducing the problem of the aging, Dr. Klumpp explained that the process begins early in life, actually as soon as an individual stops growing. Some day, he said, even pediatricians may well worry about the problem and perhaps actually play a major role.

"There are two reasons to be optimistic," he continued. "It is possible for us to strike down, one by one, the diseases that ride in on the coat-tails of old age. Second, much more will be done to extend the average life span beyond what it is today.

"Longevity stunts and record achievements of old age will be much more common. The well-established record of individuals living to 146 years proves that it is possible for the human machine to be so constructed as to last that long. But we also see individuals in clinics who are functionally and anatomically through at 45."

"From the moment of conception, our bodies live by reason of chemical processes. The job, therefore, is to find out how the chemistry of Christian Jacob Dragenberg, who lived to 146, differs from that of John Jones, buried at 42, all of whose organs showed the effects of extreme arteriosclerosis."

New "retirement separation" programs undertaken by industry, Mr. Scheid said, range from that of the Mohawk Development Service, an independent concern which consists of retired employees of a large electric corporation, to the "step-down" plan of the Wrigley Corporation, in which aging employees are granted successively increasing leaves of absence for a gradual adjustment to the retired status. At the Ithaca Gun Company, N. Y., on the other hand, employees are permitted to continue as long as they are qualified.

Mr. Scheid submitted a proposal for "Senior Achievement" programs in each community, to resemble the "Junior Achievement" movement which organizes youngsters to produce goods and services through free enterprise. Under the "senior" type, retired employees would be similarly organized. Progressive business concerns would appropriate funds to qualified civic groups, to foster the program.

ACCENT ON 'YOUTH' HARMFUL

Miss Randall spoke on the sociological aspects of aging. She said the school system in each community must adjust to a gradually decreasing proportion of younger people and adopting its curriculum to prepare the pupils for a lifetime at least 1/3 to 1/2 longer than that for which they were previously prepared. "It is imperative that courses for adults be given a place in educational systems," she declared.

"Social services which in line with the general cultural pattern have placed their major emphasis on 'Youth,' must begin to include in their programs the needs of aging persons."

As an antidote to the old-age movements of "demagogues," Miss Randall proposed organization of "golden age" clubs, correlated with the sound education programs and the efforts of religious groups. This might prevent the alarming movement of persons over 60 to hospitals of the mentally ill, she said.

A prime sociological problem, she continued, is that of the movement of elderly to warmer climates, thus injuring the structure of the towns they have left, and developing "boom towns" of the elderly. She said it forced a revision of civic government in both places. Quoting Lloyd George, she concluded, "The true test of our civilization is in the way we treat our old people."

Dr. Himler said intelligent social planning can reduce the number of those committed to mental institutions. "Commitment should be considered only as a last resort for those patients who show destructiveness, marked depression, delusions and resistiveness," the psychiatrist said.

An overwhelming majority of the aged retain their mental faculties to the full, he explained, cited a study which showed that only 3.8 per cent of those over 65 had mental disability. Geriatric psychiatry, he said, is constantly extending its preventive arm to those who once would have been committed to mental hospitals.

Dr. Franco said that if industry continues its present retirement practices, it will be faced with a seriously depleted labor pool, and top-heavy pension costs. Since the

turn of the century, he said, the number of those over 65 has quadrupled while the population has only doubled.

He urged rehabilitation of workers of any age who are chronically disabled by heart disease, arthritis and tuberculosis, so that their remaining physical capacities may be used and their working life-span lengthened. "Very worthwhile results have been obtained by the re-training of workers handicapped by amputation," he said, "and I see no reason why there could not be similar industrial rehabilitation of workers disabled by chronic diseases."

Dr. Franco also recommended for industry a long-term program for the detection and prevention of diseases which would shorten work-life expectancy. A periodic physical examination beginning at the age of 40 was suggested. "Our aim is to free workers from physical disabilities, for it is not a worker's chronological age but rather physical disabilities which necessitate retirement at age 65."

"CONFIDENCE CLINIC"
OPENS FOR WINTHROP-
STEARNS MEN

A new type of "confidence clinic" has been developed as a refresher course for veteran Winthrop-Stearns men and an advanced training period for new men, according to Arthur W. Jensen, general sales manager.

The "clinic" represents a highlight in the company's continuous program, instituted after the war to present the newest techniques in detailing and selling as well as current scientific research, to new and old Winthrop-Stearns personnel.

Mr. Jensen said that the clinics will be launched at group meetings in New York and in San Francisco. Three groups, comprising 120 men, will attend classes from 9 to 5 each day for two weeks.

Classes fall into two broad classifications, he explained. One is medical, consisting of work in anatomy, physiology, pharmacology and product information. The other is commercial, dealing with detailing and selling.

Lectures on scientific subjects are presented by the medical staff of Winthrop-Stearns, under the

supervision of Dr. E. J. Foley, medical director. Fred Spencer, manager of Retail Sales, is handling the basic training program.

Audio-visual teaching aids are used to present a comprehensive picture of the pharmaceutical field and operations. Mr. Jensen pointed out that audience participation, found effective after lectures as an educational device, has assumed an increasingly important role in the program.

NEW MICROFILMING PROC-
ESS FOR RADIOGRAPHS
ANNOUNCED BY KODAK

A new and important method of making microfile copies of radiographs, and a new microfilming machine specifically designed for that purpose, have just been announced by the Eastman Kodak Company.

The process is a two-step duplicating technique which, the company says, permits the copying of hundreds of radiographs on a single roll of film with precise and scientific accuracy.

Range of density or contrast, and resolution of detail, the company claims are reproduced with such fidelity that an enlargement—back to full size, if desired—results in an acceptable facsimile of the original.

MACHINE COMPLETELY AUTOMATIC

The machine that makes this possible is known as the Kodak Radio-graph Micro-File Machine, Model I. It is completely automatic and is constructed so that the operator can introduce no variations in its operation. This eliminates the possibility of human error and is the basis in large part of the company's claim that the machine will always produce microfile copies that are true reproductions of the original.

In use, the operator merely places the radiographs, envelopes, or other records to be copied upon the illuminator surface. When the exposure button is pressed the machine does the rest.

2,490 CUBIC FT. STORAGE RECOVERED

Approximately 750 exposures of 14x17 inch subject area can be made on one 100-foot roll of 35mm. film. As a result, 100,000 radiographs which now require about 2,500 cubic feet of storage space can be stored in 10 cubic feet. The

2,490 cubic feet recovered by this process can easily be put to other more productive uses.

Radiographs can be microfilmed in about 1 second with the new machine. During that interval the film is drawn into exact focal plane in the camera by suction, the shutter operates, and the film is advanced for the next exposure. In practical tests it was determined that normal production for a working day would be in the neighborhood of 800 exposures per hour.

CAMERA DAYLIGHT LOADING

The camera used in the Kodak Radiograph Micro-File Machine is the same type that has been proven by many years of service in document copying, and allied fields. It is mechanically simple, fast, and accurate.

It can be loaded in full daylight with 100 foot rolls of 35mm. film, and is designed in such a manner that short lengths of exposed film may be removed for processing at almost any time.

The camera is equipped with a Kodak Ektar 63mm. f/4.5 Luminized Lens. This lens has been specifically designed for this purpose and has no superior in its field, the company states.

BRILLIANT ILLUMINATOR

Illumination for copying radiographs is provided by a special illuminator built into the base of the microfilming stand. This illuminator has been designed to fit the characteristics of Kodak Micro-File Film, Type X. It gives high intensity, uniform illumination, with twenty-four 21-inch, 13 watt, fluorescent tubes. It is completely equipped with voltage control, light meter, and cooling fan to maintain maximum efficiency of illumination for its 14 x 17-inch ground-glass area.

Light for copying envelopes or other records for microfilming is provided by two lights above the copying plane.

FILM NEGATIVES KEY TO SYSTEM

In the opinion of Kodak technicians the reasons why this equipment and system will consistently out-produce any other method of microfilming radiographs lies in the fact that the 35mm. records are essentially master photographic negatives. And as negatives they will faithfully record a tremendous

range of tones and show even the slightest variation in radiograph contrast or density. These, in turn, can form the basis of enlargements up to full size of the original, paper prints and enlargements, lantern slides, transparencies for teaching collections, or artwork for halftones for printed reproductions.

The recommended film for use with this new unit is Kodak Micro-File Film, Type X. Extremely fine grained it is especially designed to record all radiographic detail and to accept the full scale of densities in the original.

Kodak Industrial X-ray Film, Type A, is recommended by the company for the production of enlargements from the master negative.

Eastman Fine-Grain Release Positive Film, Type 5302, is recommended for the production of contact prints from the master negative.

Deliveries of the new Kodak Micro-File Machine, Model 1, are expected to start in July. It will be available through all Kodak X-Ray Products dealers.

MORTALITY RATE OF WOUNDED IN KOREA LOWER THAN IN ANY OTHER WAR

Fewer wounded American soldiers in Korea are dying after they reach medical care than in World War II, said Colonel Lawrence A. Potter of the Army Surgeon General's Office in an article published in the current Practical Pharmacy edition of the Journal of the American Pharmaceutical Association. He said that the exact statistics will not be known until after the Korean operation is over, but that it now appears definite that the mortality rate of wounded soldiers is less than 2½ per cent as compared to 4 per cent in World War II. In World War I the rate was about 8 per cent.

The article, entitled "What Medicine Has Learned in Korea," is the most comprehensive report of the full Korean medical experience yet released. Col. Potter first presented this report before the convention of the American Pharmaceutical Manufacturers' Association in Boca Raton, Florida.

The lowered mortality rate of wounded is attributed, in part, to the increased number and further

uses of the antibiotics, such as penicillin, chloromycetin, aureomycin, streptomycin, and terramycin. Penicillin was the only one of these available throughout the entire Army medical system until late in the war.

The transfusion of whole blood, first used in the last war, is also a contributing factor to the lowered mortality rate.

Whole blood has been available since the beginning of the Korean operation, and is given to the wounded in the forward areas before they are evacuated to the rear. Plasma substitutes, such as dextran, polyvinylpyrrolidone, and gelatin are being used to combat shock due to injury, but Col. Potter declared that these substitutes can never replace blood plasma or whole blood.

Methadon, one of the synthetic morphine substitutes, has had a thorough field test, Col. Potter reported. Dose for dose, it was found to have the same pain-killing effect as morphine. It also causes far less nausea and vomiting, an important factor when it is considered that soldiers are moved to the rear by ambulance or plane while still under the influence of narcotics. Chloroquin, the new drug to combat malaria, was initially used last summer in its first test under war conditions. It was found effective as a suppressant, and much more desirable than atabrine, the antimalarial drug familiar to service men who fought in the Pacific areas during World War II.

Col. Potter said that chloroquin need only be given once a week instead of once a day, thus making it easier to supervise its administration. It is effective against the malaria-bearing parasites in the blood stream, but does not produce clinical cure of malaria.

The Army is at present testing another new drug called "primaquin", which, if it proves successful will bring about clinical cure of malaria. It is planned to use chloroquin and primaquin together, thus giving the soldier double protection when he is fighting in malarial countries.

The Army is also experimenting with a water-purifying tablet to replace the chlorine-type tablets now in use. If a soldier does not have a safe water supply at his disposal, the tablet is dropped into his canteen and purifies his drinking water.

Many diseases, such as amebic dysentery, are caused by drinking impure water. The new tablet is said to be more effective as a water purifier than the chlorine tablet.

Col. Potter said that the Army Medical Service has been studying and evaluating a new type of dressing for extensive body burns. The dressing, which is a pad about 3 feet long by 2 feet wide, has on the side touching the patient a fine gauze covering backed up by many sheets of an impermeable material resembling facial tissue.

These sheets soak up the liquid matter which oozes from burn wounds, and prevents it from permeating to the outside of the bandage. This is important in preventing infection, as this liquid matter is an excellent source for growing colonies of germs exhaled from the mouth and throat, with ultimate infection of the burned area.

A bandage which is chemically treated to make it self-adhering is also being given extensive testing. The bandage also has a two-way stretch, so it can be placed tightly and securely over the wounded area without the use of safety pins or tape.

The value of ACTH to war medicine is being investigated in the Far East. It is being used in the treatment of burns, frost bite, and in wounds where the nerves have been injured. Scar tissue, which makes surgical repair of nerves difficult, is prevented by ACTH.

CAN CO. ELECTS BOARD CHAIRMAN AND PRESIDENT

The American Can Company has announced the election of C.H. Black, president of the container-making firm since 1949, as chairman of the board of directors and W. C. Stolk, executive vice president, to fill the position of president.

Mr. Black succeeds D. W. Figgis, who retires as chairman of the board after being with the company for almost 50 years. Mr. Figgis will continue to serve the firm in an advisory capacity and as a director.

The new board chairman started his career with the can company in 1908 as a machine operator in a former Brooklyn, N. Y., factory. He was then 21 years old. The following year he was transferred to the sales organization and in

1911 became a salesman in Buffalo.

After holding a number of sales posts, Mr. Black was named Atlantic district sales manager in 1931. In subsequent years he became assistant general sales manager, general manager of sales and, in 1940 vice president in charge of sales. A year later he was made a director of the company. In 1943, he was elected executive vice president and a member of the executive committee. He became president in April, 1949.

Mr. Stolk, who succeeds Mr. Black as president, started with the company in 1916. He first was a time keeper in the firm's former "Manhattan" plant in New York.

After having served in the Tank Corps during World War I, Mr. Stolk joined the can company's sales organization and subsequently held sales posts in New York, Pittsburgh, and Philadelphia. He returned to New York in 1932 as a sales division manager in the Atlantic district, and served in several other important sales positions during the next few years. He became general manager of sales for the company in 1941 and vice president in charge of sales three years later. He was elected executive vice president and a director in 1949.

Mr. Figgis, the retiring board chairman, started with the can company in 1902 as a clerk. The firm was then less than one year old. He was transferred to the sales organization within a few years and subsequently served in virtually every major sales position, being made vice president in charge of sales in 1936. He was elected executive vice president in 1940 and in 1943, president. He has been chairman of the board of directors since 1949.

ANNOUNCEMENT

The Michael Reese Hospital Postgraduate School is offering a two-week course in "Diseases of the Endocrines—Physiology and Diagnostic Methods." This full-time intensive course will meet from July 9th to July 21st, 1951, and consists of a balanced program of basic information and clinical applications. Dr. Rachmiel Levine, Director,

Dept. of Metabolic and Endocrine Research is coordinator of the course. For further information, address: Dr. Samuel Soskin, Dean, 29th St. & Ellis Ave., Chicago 16, Ill.

A full-time intensive course in "Hematologic Diagnosis", under direction of Dr. Karl Singer, will be presented by the Michael Reese Hospital Postgraduate School from July 23rd to August 4th, 1951. This two-week course offers a review of the present status of hematology and instruction in actual reading of slides of normal and pathological specimens of peripheral blood and bone marrow. For further information, address: Dr. Samuel Soskin, Dean, 29th St. & Ellis Ave Chicago 16, Ill.

YESHIVA UNIVERSITY

Formation of an eleven-man Council of Medical Education to guide the development of the projected Medical School at Yeshiva University, was announced recently by Dr. Samuel Belkin, president of the University.

Dr. Harry M. Zimmerman, Chief Pathologist and head of the Laboratory Division at Montefiore Hospital, Bronx, and Professor of Pathology at Columbia University's College of Physicians and Surgeons, has been elected chairman, Dr. Belkin reported.

Dr. Donald G. Anderson, Secretary, American Medical Association's Council on Medical Education and Hospitals, and Dr. John B. Pastore, Executive Director, Hospital Council of Greater New York and Assistant Professor of Clinical Obstetrics and Gynecology at Cornell University Medical College will serve as consultants to the group.

The Council comprises distinguished scientists and physicians who have wide experience in the field of medical education and administration and who have already made lasting contributions to the advancement of medical science, Dr. Belkin explained. He added that additions to the Council will be made from time-to-time.

"The Council," Dr. Belkin declared, "is making a thorough study of the particular contributions which the new Medical School of Yeshiva University can make in the field of medical science; of the most suitable site for the erection of the necessary buildings

and of the many other needs for the efficient functioning of Medical and Dental Schools."

Dr. Belkin stated that many other leading medical men and associations have volunteered their services in planning the Medical School which will mark the first phase of a \$25,000,000 Medical center planned by the University. The projected Medical Center will contain schools of Medicine, Dentistry, Nursing, Public Health and Post-Graduate divisions.

Members of the Council include:

Dr. Bernard J. Alpers, of Philadelphia, Professor of Neurology at Jefferson Medical College. He is also attending neurologist at Jefferson Medical College Hospital and the University of Pennsylvania Hospital.

Dr. Leo Davidoff, noted Neurosurgeon of New York City, Director of Neuro-surgery at Beth Israel hospital and Chief Neuro-surgeon at Mt. Sinai Hospital. Dr. Davidoff is also Clinical Professor of Neurosurgery at New York University College of Medicine.

Dr. Dayton J. Edwards, Professor Emeritus of Physiology at Cornell University Medical School in New York City, and secretary to the faculty. He served as Associate Dean of the Medical School until June, 1950.

Dr. Harry Gordon, of Denver, professor of Pediatrics at University of Colorado, School of Medicine.

Dr. Horace Hodes, of New York City, Chief Pediatrician at Mt. Sinai Hospital and Clinical Professor of pediatrics, College of Physicians and Surgeons, Columbia University.

Dr. Marcus Kogel, Commissioner of Hospitals, New York City.

Dr. Louis H. Nahum, of New Haven, Conn., Assistant Professor of Physiology at the Yale University School of Medicine. He is past president and chairman of the executive committee of the New Haven Medical Association and the author of numerous articles dealing with metabolism and cardiology.

Dr. Isadore Snapper, of New York City, Chief of Medicine at Mt. Sinai Hospital and Director of Medical Education for the hospital.

Dr. Abraham White, of New York City, Vice-President and Director of Research, Chemical Specialties Co., Inc. He was formerly chairman, Department of Physiological Chemistry, University of Southern California Medical

Center and Associate Professor of Physiological Chemistry at Yale University.

Dr. Maxwell M. Wintrobe, of Salt Lake City, Utah, physician-in-chief of Salt Lake General hospital and professor of Medicine at the University of Utah Medical School. He is also chief consultant to the Salt Lake City Veterans Hospital.

Dr. Harry M. Zimmerman, of New York City, Chief Pathologist and head of the Laboratory Division of Montefiore Hospital. Professor of Pathology at Columbia University's College of Physicians and Surgeons.

YESHIVA UNIVERSITY MEDICAL SCHOOL

On December 15th, 1950, New York State's Board of Regents amended the Charter of Yeshiva University empowering it to open a Medical and Dental School. This marked the first such move by the Regents in 114 years for a Medical School charter.

In seeking to establish a Medical School, Dr. Belkin explained, Yeshiva University is governed by the consideration that it is anxious to render service to our nation and, especially, to solidify Jewish contributions to American higher and professional education. As the first American University under Jewish auspices, "Yeshiva University is deeply concerned in blazing a trail of its own in the field of higher education in conformity with the great American democratic traditions of education and in harmony with the spiritual heritage of Judaism," Dr. Belkin said.

Dr. Belkin averred, "We are all aware of the oft-repeated predictions that there will be a nationwide shortage of physicians. It is our intention to alleviate, in some measure, this serious situation which affects directly our nation's health and well-being."

THE NEED FOR MEDICAL FACILITIES

In almost all fields of education, our colleges and universities have kept pace with the population growth. However, while New York City's population has increased 4½ million since 1900, no new medical schools have come into being in this city since 1898. Insofar as the entire state is concerned the new school will be the first one opened in 25 years.

In New York State, today, with a population of 14,830,000 there are only 9 medical schools with a total enrollment, in 1949-50, of only 2,916 students. There were 581 graduates who completed their studies in the year 1949-50.

To achieve its objective, Dr. Belkin said, that the University has launched a special gifts campaign. "Our goal for 1951, is 10 million dollars to make it possible for us to open the school in 1952," he added.

He pointed out that negotiations are now going on with leading hospitals in the city to determine the areas of cooperation. "While the over-all objective of Yeshiva University is the establishment of a Medical Center encompassing Colleges of Medicine, Dentistry, Nursing, Public Health and Post-Graduate Divisions, the immediate objective is a Medical School," he said.

Dr. Belkin asserted that the University is determined to organize Grade "A" Medical and Dental Colleges and that it is planned to provide eventually for 400 students in each of the two Schools. "The sole criterion for admission will be scholarship and character. No distinctions will be made as to the origin of the applicants," he stated.

Yeshiva University at Amsterdam Avenue from 185th-187th Streets, New York City comprises eight schools and divisions with an enrollment of almost 2,000 students from all parts of the world. The eight schools and divisions of the University are the Rabbi Isaac Elchanan Theological Seminary, College of Arts and Sciences, Teachers Institute, Bernard Revel Graduate School, Harry Fischel School for Higher Jewish studies, School of Education and Community Administration, Talmudical Academy High Schools, and the Institute of Mathematics. The University sponsors a number of auxiliary services including a Service Bureau, Audio-Visual Service and Community Service Bureau. Three noteworthy scholarly publications emanate from the University, "Horeb" and "Talpiot" in Hebrew, and the internationally-famed mathematical journal, "Scripta Mathematica." The institution started in 1879 with the founding of the Rabbi Isaac Elchanan Theological Seminary, and reached University status in 1945.

It's *simply* physical

Diarrhea control does not require complex equations denoting physical adsorptive powers for toxins and bacteria, physical coating potentials, or hydrophilic capacity for physically precipitating stools.

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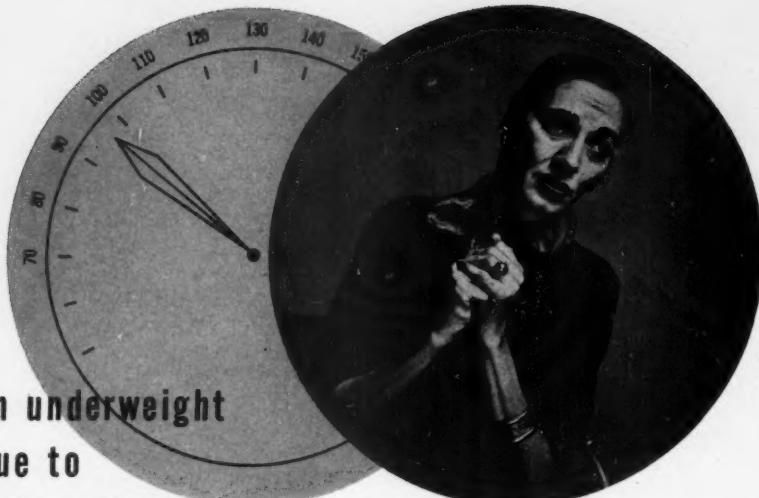
Directions ADULTS — 2 or more tablespoons after each bowel movement, or as indicated.

CHILDREN — 1 or more teaspoons according to age.

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when underweight
is due to
fat starvation...

...as frequently occurs in the young and aged¹, or in sprue, celiac disease, pancreatic fibrosis, ileitis, or following gastric surgery^{2,3},—extraordinary measures must be taken to insure absorption and utilization of this vital nutrient so intimately connected with many metabolic activities, particularly fat-soluble vitamin utilization.

High fecal fat content — a sure sign of fat starvation — is frequently due, in the above mentioned conditions, to a bile or intestinal enzyme deficiency and cannot be readily corrected by the administration of bile salts, etc. In such steatorrheal conditions the use of special fat emulsifiers, such as **MONITAN®** has materially reduced fecal fat content, improved the nutritional status of the patient and has often led to good weight gains^{1,2,4}.

MONITAN is a palatable, orange-flavored, solution of Sorbitan Monooleate Polyoxyethylene Derivative, available in 12 oz. bottles. Dosage: Adults 1 to 2 teaspoonsfuls three times daily with meals.

Ref.: 1. Becker, G.H., et al.: Gastroenterology 14:80, 1950
2. Jones, C.M., et al.: Ann. Int. Med. 29:1, 1948
3. Jones, C.M.: Cal. Med. 71:253, 1949
4. Kiefer, E.D. & Arnold, W.T.: J.A.M.A. 144:903 (Mar. 11) 1950

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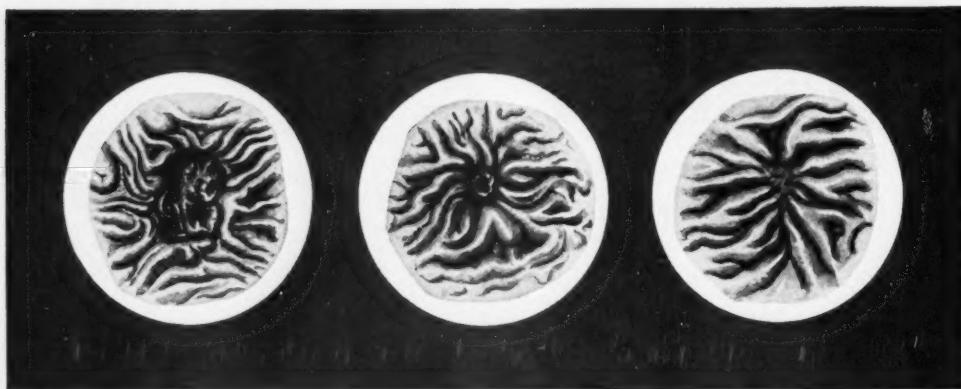
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And her doctor will probably riot,
For a name for the child is driving her wild—
Far more than the thought of her diet



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IRON AND VITAMIN B COMPLEX FACTORS)

**SCHENLEY LABS SEND 7
OFFICIALS ON SURVEY
ABROAD**

New York, June 7—Seven executives of Schenley Laboratories, Inc., headed by Arthur C. Emelin, president of the Schenley Industries, Inc., affiliate, departed by plane today for a 30-day investigation of current operations by pharmaceutical companies in three European countries.

Purpose of the trip, according to Emelin, is to assist pharmaceutical associates abroad—particularly in production of antibiotics—and to

study recent progress in pharmaceutical research and manufacturing.

"We feel that foreign trade is a two-way avenue," the Schenley Laboratories president explained. "An exchange of know-how and products is beneficial to pharmaceutical houses on both sides of the Atlantic."

Those making the month-long trip to Western Germany, France, and Spain, in addition to Emelin, are Aaron Levy, executive vice-president; Sidney N. Sadoff, vice-president in charge of engineering;

Dr. Bruno Puetzer, vice-president in charge of research; George Gilbert, export manager; Milton Seasonwein, assistant general counsel, and David Ginsburg, consultant.

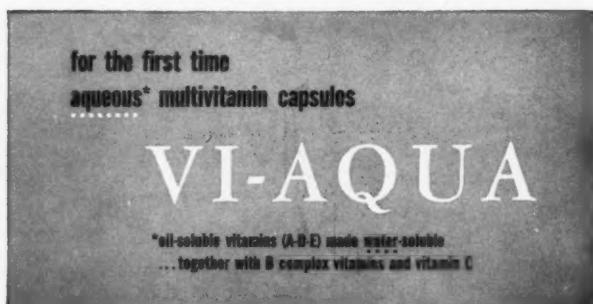
The party will proceed directly to Ludwigshafen, Germany, for roundtable conferences with executives of Badische Anilin and Soda Fabrik, and will visit the Bayer Company at Leverkusen, Germany for similar conferences. Schenley Laboratories has a contract licensing agreement with Bayer, which includes the exchange of technical data and information. During World War II Badische Anilin and Bayer jointly developed the synthetic solution, polyvinyl pyrrolidone, which is used as a "blood extender" in the treatment of patients suffering from shock and wounds. Schenley laboratories is investigating the product, which is known in this country under the trademark "PVP-Macrose."

Following the conference at Leverkusen, the entire party will fly to Paris, France, where the Sofrapen Co. has operated since July, 1948, a penicillin production plant designed by Schenley and in which the production is based upon Schenley Laboratories' know-how. Part of the group will then visit other countries, and all will return to this country early in July.

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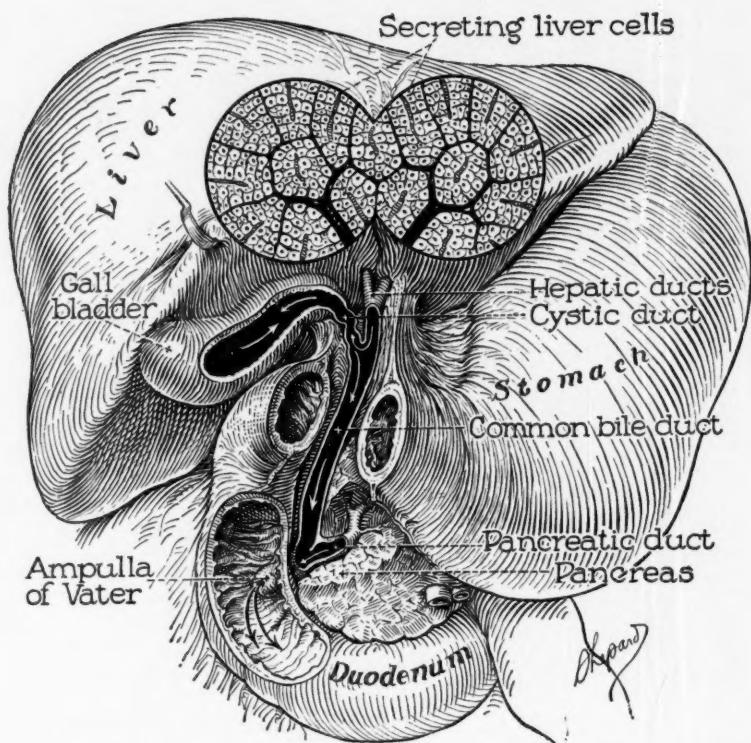
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